D66
v.143

DOMESTIC ENGINEERING

FEBRUARY
1934

...TOMATIC HEAT AND AIR ...DITIONING SECTION—
PAGE 45

...ER AND BAR EQUIP-...MENT SECTION—
PAGE 135

New Opportunities for Success in 1934 Open Up as Increased Purchasing Power Follows Federal Farm and Home Loans—

Increased Sale of
Water Supply Systems
Reported in Mid-West

Three Plumbing Codes Filed—
News of CWA—Conventions
in Illinois, Wisconsin and
South Dakota

Plumbing & Heating Contracting and Merchandising

Announcing

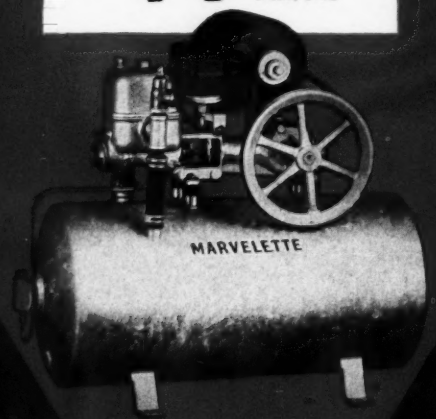
LOWER PRICES

ON "MARVEL" AND "MARVELETTE" WATER SYSTEMS

All points of Deming superiority have been retained.

now $49.50 F. O. B. SALEM, OHIO

Deming Water Systems lead the drive for new business.



Line up with Deming Water Systems and keep AHEAD of COMPETITION. Write for Price List and particulars today.

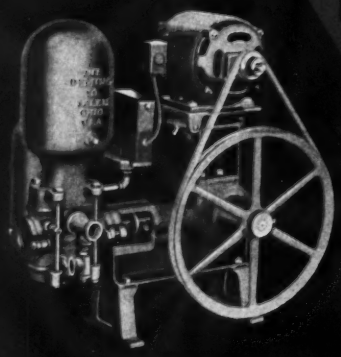


Fig. 1895—No. 1
Capacity 265 gallons per hour

now $51.00 F. O. B. SALEM, OHIO
Equipped with Ball and Roller Bearings

Prices on all other sizes of Deming "Marvels" and "Maryelettes" reduced proportionately.

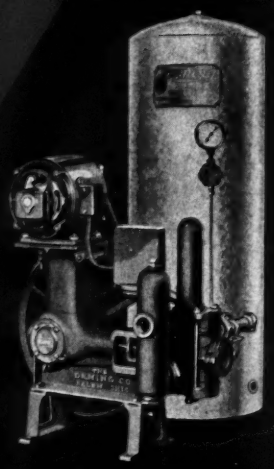


Fig. 2095—No. 1-42
Capacity 265 gallons per hour

now $68.00 F. O. B. SALEM, OHIO
Equipped with Ball and Roller Bearings

The Deming Co.
Established 1880
Salem, Ohio

HAND AND POWER PUMPS FOR ALL USES

Business is improving!

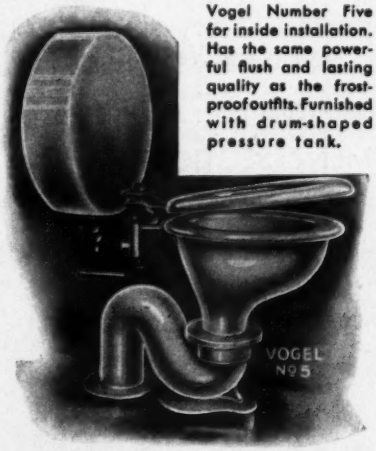
but don't wait for it to come to you

...go after it

WE are helping you get it — we have re-designed our entire line. New low down drum-shaped tanks have been added to all our outfits. An entirely new frost-proof outfit, the Number 4, with a china bowl and top supply is going over big with plumbers and their customers.

New literature is available — imprinted with your name and address — it is designed to bring in new customers and "jack up" your old ones. Write for these new folders and blotters.

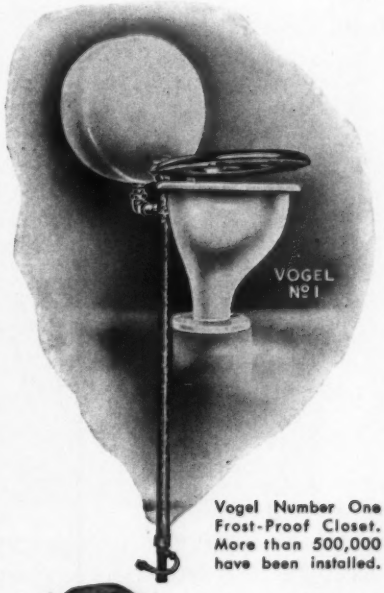
But go after the business. It is there and it's profitable for plumbers who push the Vogel line.



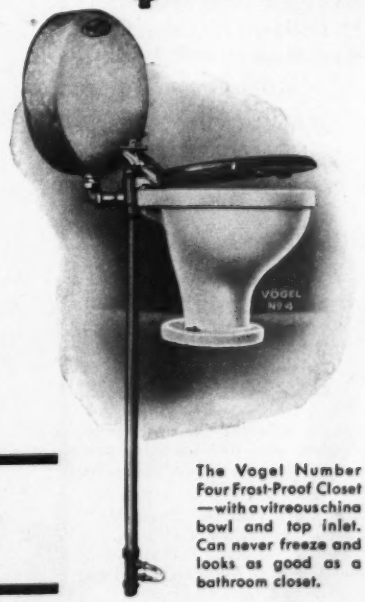
Vogel Number Five for inside installation. Has the same powerful flush and lasting quality as the frost-proof outfits. Furnished with drum-shaped pressure tank.

JOSEPH A. VOGEL COMPANY
Wilmington, Del.
St. Louis, Mo.

★

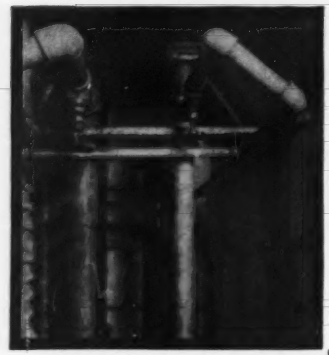


Vogel Number One Frost-Proof Closet. More than 500,000 have been installed.



The Vogel Number Four Frost-Proof Closet — with a vitreous china bowl and top inlet. Can never freeze and looks as good as a bathroom closet.

VOGEL PATENTED **Products**



DOMESTIC ENGINEERING

Plumbing & Heating Contracting & Merchandising

Vol. 143. No. 2 — Established 1889

Whole No. 1991 — FEBRUARY, 1934

Published Monthly by
Domestic Engineering Co.
1900 Prairie Avenue, Chicago

O. T. CARSON
President and Treasurer

E. DE FOREST WINSLOW
Vice President

D. J. HANSEN
Secretary

EDITORIAL STAFF
R. V. Sawhill,
Editor

R. Herlov, L. W. Britton,
Wm. W. Gothard,
Associate Editors

R. M. Starbuck, Jr.,
Consulting Editor on Plumbing

ADVERTISING REPRESENTATIVES
E. G. Hutchison
Douglas M. Kenney
H. J. Carr
A. T. Papineau
J. U. Farley
H. M. Thompson

FIELD REPRESENTATIVES
T. H. Craige, T. J. Foley, G. F. Hagendorn, John R. Lewis, E. W. Barnes

BRANCH OFFICES
NEW YORK—
Rooms 1705-1706, 110 East 42nd St.

CLEVELAND, OHIO—
310 Citizens Building

TERMS OF SUBSCRIPTION
Anywhere in the World, $2.00 per year.
Current copies, 25c each
Back numbers, 50c each

Entered as Second Class Matter on September 26, 1932, at the Post Office at Chicago, Illinois, under the Act of March 3, 1879.

Copyright 1933, by Domestic Engineering Co.

Member of Audit Bureau of Circulation and Associated Business Papers

IN THIS ISSUE

	Page
This Month's News in Brief	22
Rural Purchasing Power	24
Water Supply Systems	25
Wall Coverings! Sell the Complete Room	27
A New Feature—It Pays to Investigate. By H. M. Brusman	30
The Reasons for Vents. By Walter S. L. Cleverdon	32
How to Figure Overhead Expense. By R. H. Pflug-Felder	35
A Collection of Errors. By Wm. W. Stevens	38
Central Western Wholesalers Meet	108
Illinois Master Plumbers' Annual Convention	121
Wisconsin Master Plumbers' Annual Convention	123
How Public Work Should Be Done	125
South Dakota Master Plumbers' Annual Meeting	129

AUTOMATIC HEAT AND AIR CONDITIONING SECTION

Big Market for Air Conditioning	61
Awnings Reduce Cooling Loads. By L. Gwathmey	64
Oil Burner Jobs Are His Showrooms. By R. C. Nason	67
Small Residence Air Conditioning. By M. K. Drewry	69
This Job Is Gas-Fired	73
Electricity Facts. By R. C. Allen	75
Owners of Stokers Are His Best Prospects	81
Exhibitors at the Third International Heating and Ventilating Exposition	84
Automatic Heat and Air Conditioning Questions	85

BEER AND BAR EQUIPMENT SECTION

Glasses to Wash	137
Clean Coils Make Clean Beer	139
Minneapolis Dealers Secure New Ordinance	140
What Readers Ask	142
Products for the Beer and Bar Equipment Dealer	144

SPECIAL DEPARTMENTS

Editor's Page	18
Our Industry	21
Questions and Answers	40
Supply News	107
New Products for Store, Shop and Job	113
The Trade	117
Convention Dates	132
Index to Advertisers	156

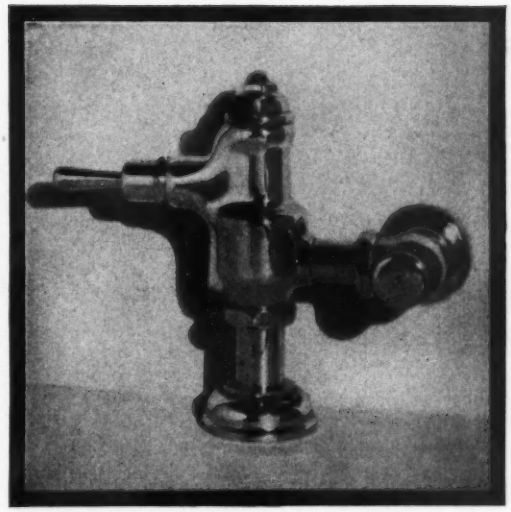
SALESMEN WANTED!

WAIT a minute. . . . We're not going to hire you. But we *are* looking for plumbing contractors who are willing to sell. There's plenty of business for you in Scovill Flush Valves . . . if you just step out and get the jobs.

New buildings are going up out of public works funds. Old buildings are running down — and need new valves. Aggressive selling will bring you this business. Give every prospect the Scovill sales story. Like this:

"Here's the only self-lubricating flush valve on the market. It has a self-cleaning by-pass that prevents clogging. The flush is regulated from the *outside*, without shutting off the water. It works smoother. Lasts longer. And it's setting service records!"

Back of all Scovill fittings are 134 years' manufacturing experience plus rigid quality standards. Ask your jobber for further information. And write today for our Flush Valve Catalog, complete with roughing-in dimensions.

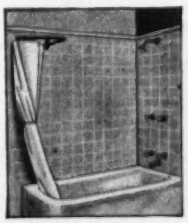


SCOVILL MANUFACTURING COMPANY
PLUMBERS' BRASS GOODS DIVISION

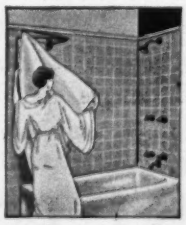
WATERVILLE • CONNECTICUT

Scovill Flush Valves, Shower, Bath and Lavatory Fittings, Miscellaneous Plumbers' Brass Goods

FOLDSPRAY, THE NEW SHOWER-CURTAIN UNIT



Compact



Easy to work

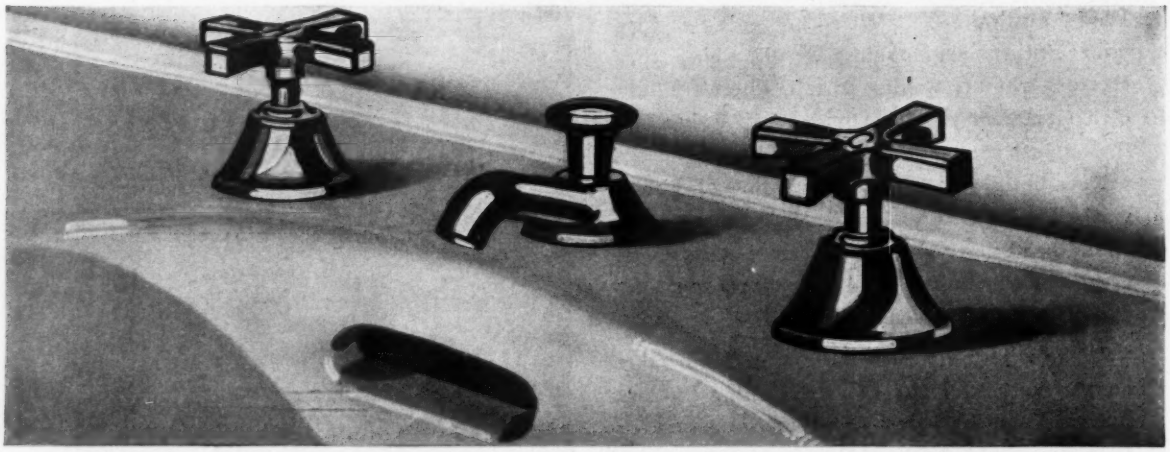
Ample space

A brand-new Scovill sales-builder. Cuts out the awkward overhead rod. Makes the bathroom look bigger and better. Easy to install on any built-in tub. (Full instructions furnished.) Finished in heavy chromium. Comes complete with mildew-proof curtain. Write for details now.

SCOVILL

NRA

Changing Fashions increases BUSINESS



Crane RIVAL *Chromium Plated All-Metal Fixture*

A dress designer changes a sleeve . . . and millions of new gowns are sold. An automobile maker creates a streamlined model . . . and last year's cars are out of date. Crane develops a new style . . . and a new market opens for plumbing contractors.

People have been educated to want the newest style in everything. Every change means more business for an industry. Plumbing is no exception.

One of the latest developments is the Crane RIVAL all-metal lavatory fixtures. Smart and modern in line, free from breakage, they have outmoded porcelain-handled supply and waste fixtures.

Whenever you are called on to replace a broken handle, it is your opportunity to call attention to Crane RIVAL designs and sell an entire new supply and waste fixture.

NRA

CRANE

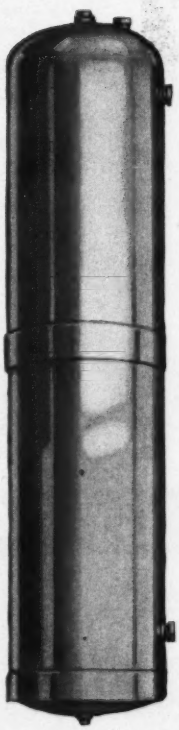
CRANE CO., GENERAL OFFICES: 836 S. MICHIGAN AVENUE, CHICAGO, ILLINOIS · NEW YORK: 23 WEST 44TH STREET

Branches and Sales Offices in One Hundred and Sixty Cities

VALVES, FITTINGS, FABRICATED PIPE, PUMPS, HEATING AND PLUMBING MATERIAL

BADGER

is now making and selling



Constructional features that mark the Brown & Brothers Copper Range Boiler as being exceptionally strong and durable:

Top and bottom halves drawn seamless into shell form from solid copper billets.

Top and bottom of shells thicker than the side.

All internal parts thoroughly tin-coated.

Transverse joint at center, sealed by special process, more than meets the most rigid standard for range boiler construction.

Spuds and shell made integral by special process giving greater assurance than ever of non-leaking service. Maximum strength where needed—top, bottom, joint, and spuds.

Brown & Brothers

Seamless Drawn

Copper Range Boilers

EFFECTIVE February 1st, we acquired from The American Brass Co., of Waterbury, Connecticut, the entire rights to the manufacture, sale and distribution of this high-grade, copper range boiler which has been on the market since 1876.

You, as a member of the trade, will be interested in this announcement because it means that this well-known boiler will be made now by experts almost a century in the business. The high standard of workmanship always identified with this product will be maintained. In addition, there will be brought to the manufacture of this boiler an experience of many years in making quality copper range boilers.

If you are a wholesaler it will pay you to carry this boiler in stock. If you are a contractor you will now have further opportunities for making profitable sales and satisfied customers.

Details of interest to either wholesaler or contractor furnished on request.

E. B. Badger & Sons Company

75 Pitts Street **271 Madison Ave.**
Boston, Mass. **New York, N. Y.**

SENSATIONAL!

RED JACKET 1934 LINE

Our Liberal Dealers' Discounts Remain Unchanged

LOWEST PRICED SHALLOW WELL WATER SYSTEMS

Red Jacket dealers are enjoying a good business in water systems! The low price and long trouble-free service assure them of a quick turnover and good profit. All Red Jacket Systems are constructed of the finest materials. Check these outstanding features:

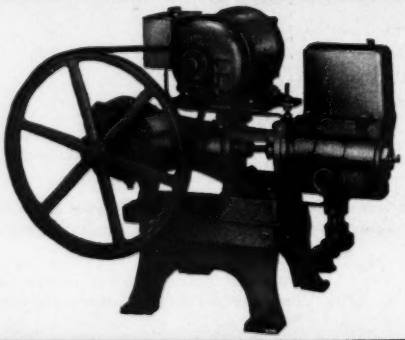
SPECIFICATIONS—Model 1150. Will deliver 250 gallons per hour from well or cistern up to 22 feet in depth. Water lubricated bearings—no oily water, no stuffing box leakage. Powered by ¼ H.P. 110 Volt A.C. 60 cycle Century Motor. Cutler-Hammer Pressure switch with thermal overload coil, and button mounted on motor. Built-in relief valve. V-belt drive. Mounted on heavy galvanized 8 gallon tank. Also available with 20 and 42 gallon tank or without tank. Equipped with gas engine if desired.

250 Gallons per Hour. Water lubricated, compact, quiet. Well balanced — gives trouble-free service. A leader in its field.

Model 1150 $45.75

SPECIFICATIONS—Model 1153-C. A new model that will deliver 350 gallons per hour from well or cistern up to 22 feet in depth. Powered by ¼ H.P. 110 Volt A.C. 60 cycle Century Motor. Cutler-Hammer Pressure switch mounted on motor with thermal overload coil and button. Relief valve, V-belt drive. Strongly constructed throughout. Available with 12, 42 and 120 gallon galvanized tanks. Equipped with gas engine if desired.

350 Gallons per Hour. A new model, rigidly constructed of the finest materials. Quiet, economical to operate.



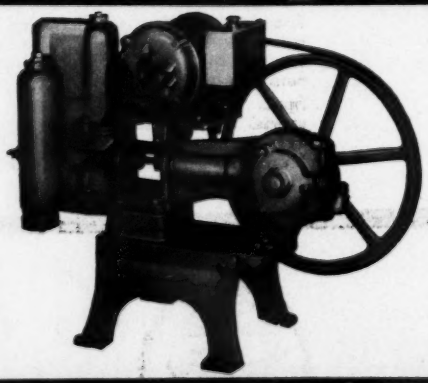
Model 1153-C $52.50

SPECIFICATIONS—Model 1155-C. Another new model that delivers 500 gallons per hour. Powered by ⅓ H.P. 110-220 volt A.C. 60 cycle Century Motor. Pressure switch mounted on motor with thermal overload coil and button. Relief valve, V-belt drive. A powerful high capacity unit. Available with 12,42 and 120 gallon galvanized tank. Equipped with gas engine if desired.

New 1934 catalog with new prices is now ready.

Also complete line of hand, windmill and three-way pumps.

500 Gallons per Hour. A compact, sturdy unit. Well balanced. Will give dependable service for heavy requirements. Note the low price.



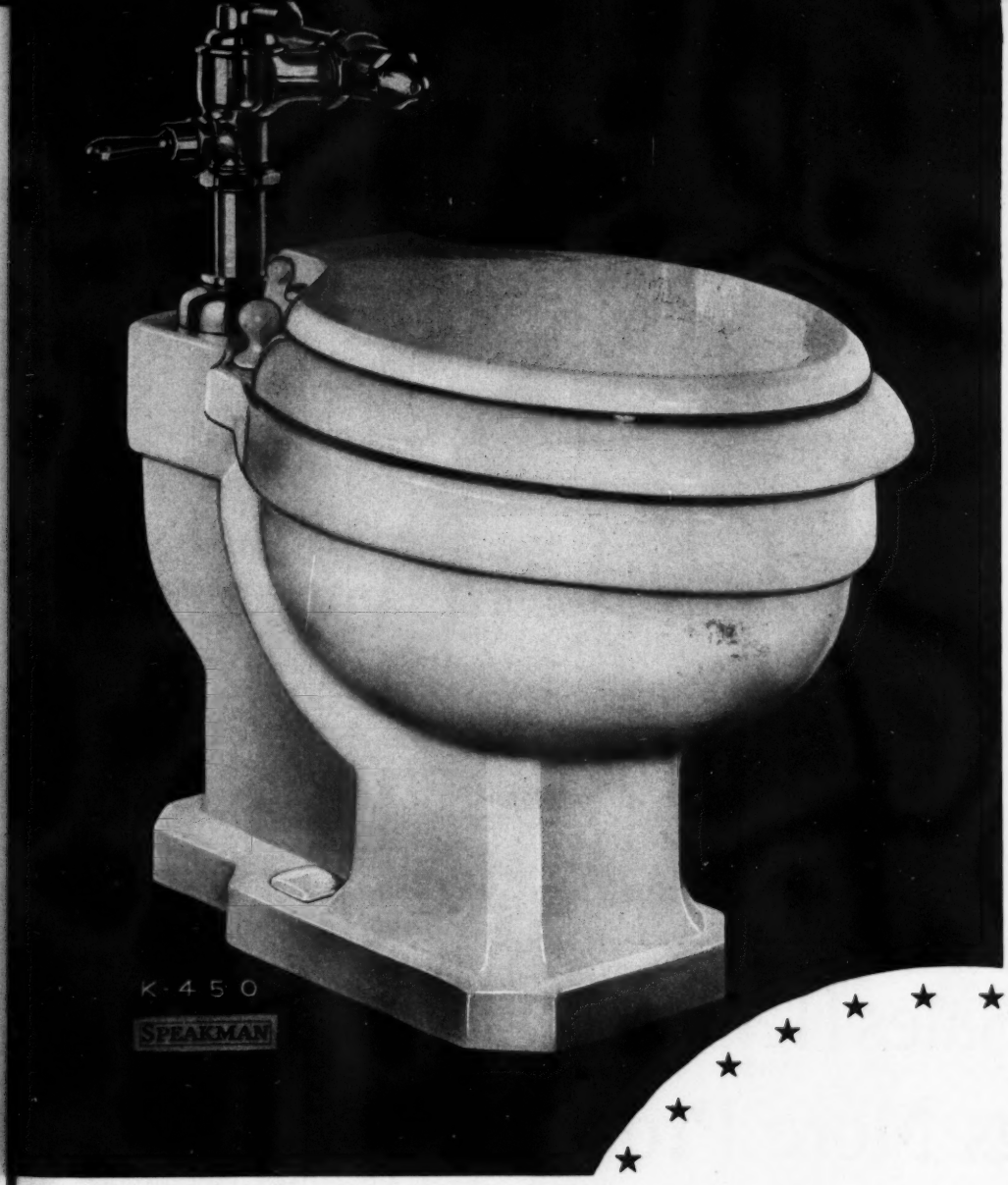
Model 1155-C $79.50

RED JACKET MFG. CO., Davenport, Iowa

(Mfgrs. of Pumps and Water Systems for 58 years)

DORWARD-Red Jacket

WATER SYSTEMS AND DEEP WELL POWER HEADS



NEVER

WAS THERE A COMBINATION SO EFFICIENT ... AN OUTFIT SO QUIET AS THE...

SPEAKMAN *SI-FLO**

There's a new deal in closets and a new deal in flush valves, for at last there is a combination that you can guarantee to be quiet—no line or hissing noises, no bump when the valve closes, no gurgling or flushing noises from the closet at any time.

Its quietness is hardly believable!

Here is the answer to the embarrassing, annoying noises which come from the bathroom—install the Speakman Si-Flo combination. Your wholesale plumbing dealer is ready to supply either regular or elongated bowl and a wide choice of seats in any color, open or closed front — and with or without covers.

Our new bulletin-folder is complete with descriptions of various types, also roughings-in. They'll also give you complete information about the Si-Flo flush valve. Send them to your customers. They are written in plain, understandable, non-technical language. Tell us how many you want with your name and address imprinted.

SPEAKMAN COMPANY
Wilmington Delaware

Compact piston unit of SPEAKMAN Si-Flo Flush Valve—the complete working parts. Can be replaced at almost negligible cost, and in five minutes.

SPEAKMAN *Showers & Fixtures*

* Reg. U. S. A.

A New Sales Help to Make Ace Tank Fittings More Profitable for You

Again Nibco leads. We designed and built the ACE Ball Cock, which on merit alone has become the fastest selling ball cock in America, and now we are furnishing sales material with which the plumber can combat cheap competition and swing his business to the quality and profit items of the ACE line. The illustration shows the front cover of a new eight-page folder, envelope size, in two colors, now available to plumbers. Ask your jobber or write direct for your supply of these folders. There is no cost, no obligation.

NORTHERN INDIANA BRASS CO.

ELKHART NIBCO INDIANA

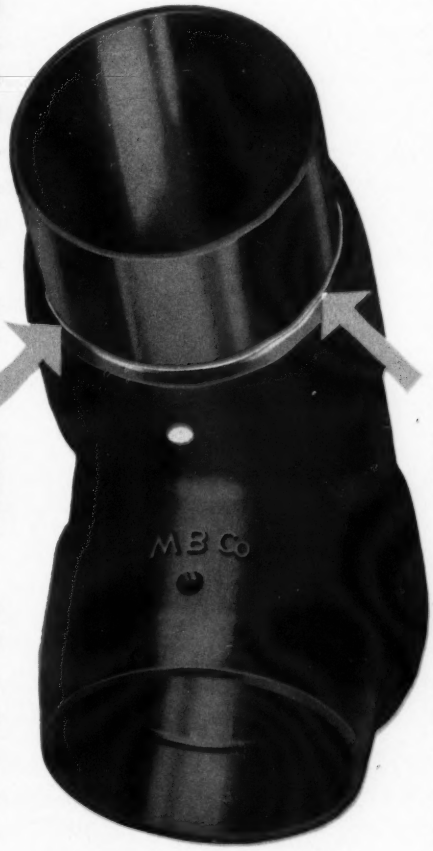
STREAMLINE HARD COPPER PIPE AND FITTINGS

TRADE MARK REG. U. S. PAT. OFF.

The Fittings that Automatically Furnish Visual Proof of a Perfectly Bonded Connection

WHEN you feed the solder INTO the STREAMLINE fitting it furnishes its own visual assurance of a leak-proof, perfectly bonded joint, by its appearance as a SILVER RING at the end of the fitting around the full circumference of the pipe.

WHEN the pipe and fitting have been cleaned and fluxed, then sufficiently heated with the blow torch, you can feed the solder from any position—it does not make the slightest difference where the feed hole is located on the job—whether top, bottom or side—THE SOLDER FLOWS UPWARDS JUST AS READILY AS DOWNWARDS. There is no guess work about it — capillarity inevitably works, sure and certain as gravitation itself. The feed hole, which is located midway between the internal shoulder and the outer edge of the STREAMLINE fitting is an important and exclusive feature.



TESTING BECOMES A MERE FORMALITY WHEN YOU HAVE VISUAL PROOF

THE solder ring is not mechanically produced by feeding from the end of the fitting — it occurs AUTOMATICALLY as a result of capillarity, which has drawn the solder THROUGH THE FEED HOLE and from the feed channel in the fitting, causing it to distribute evenly between the bonding surfaces — AND TO FLOW OUTWARDS to the end of the fitting, where it appears as a silver ring—your PROOF RING of a perfect joint. You KNOW it cannot leak, that vibration cannot work it loose, that it is permanent and actually stronger than the pipe itself.

YOUR PROOF RING OF A PERFECT CONNECTION LEAK PROOF AND VIBRATION PROOF

STREAMLINE products enable the plumbing or heating contractor to give his prospect a non-rusting, non-clogging copper installation at a price closely comparable or in many cases at the same price as iron—and with a substantial profit to himself.

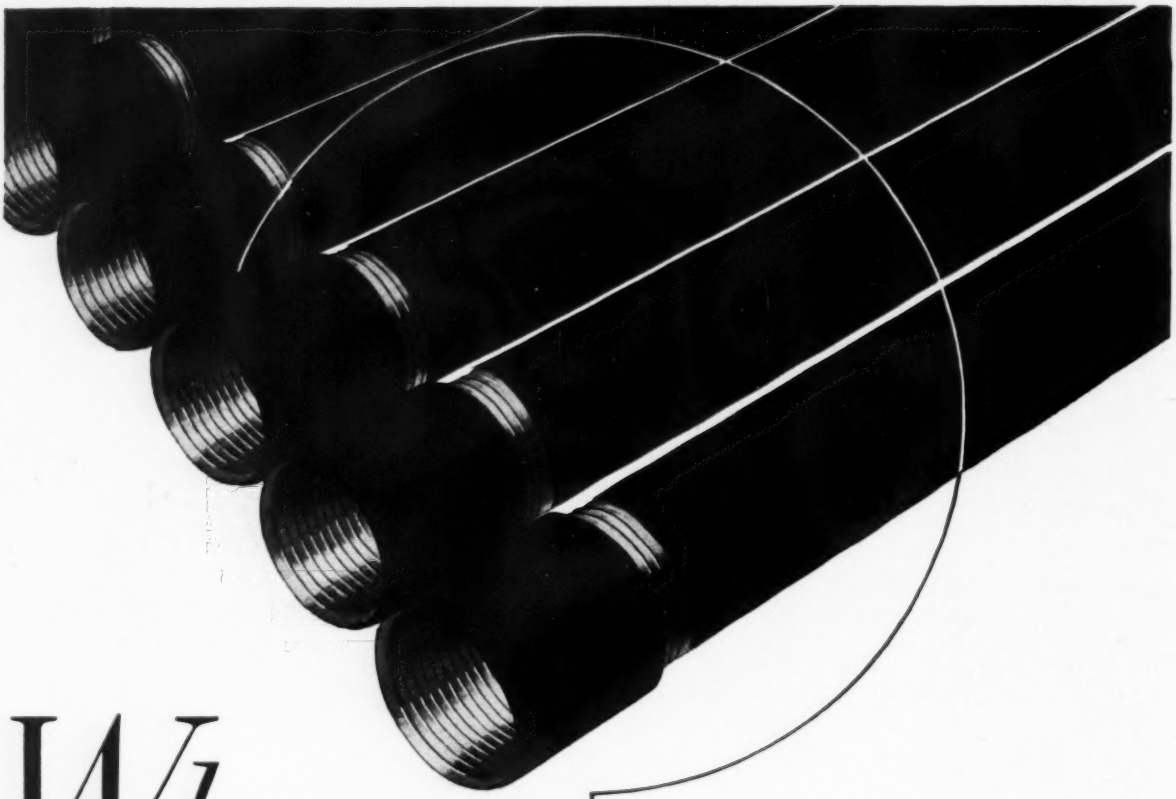
STREAMLINE gives the contractor an article of exceptional sales merit and a potential source of increased business in unprosperous as well as prosperous times. It utilizes an entirely new and successful principle in piping connections AND REQUIRES THE PLUMBER'S SKILL AND TOOLS TO INSTALL. Its remodeling possibilities are unlimited. It cannot be procured from direct-to-you houses or department stores.

STREAMLINE DRAINAGE FITTINGS ARE NOW AVAILABLE IN 1¼", 1½" AND 2" SIZES. LET US SEND YOU INFORMATION.

STREAMLINE PIPE AND FITTINGS

PORT HURON, CO. MICHIGAN

DIVISION OF MUELLER BRASS CO.



What price HOMOGENEITY

In the course of a year, Republic salesmen are many times asked the question, "Why should we pay a premium for Toncan Iron Pipe?"

The answers, "Because it lasts longer," and "Because it is worth it for economy reasons," are true, but there's a better answer.

The premium you pay for Toncan Iron is the price you pay for homogeneity—perfect uniformity. Toncan Iron is an alloy of refined iron, copper and molybdenum—and please don't confuse it with copper-bearing steel. To make such an alloy requires experience, more expensive materials and costly time. Severe specifications control the material charged into the open hearth. The refining of the iron and the addition of the copper and molybdenum at the right time are real accomplishments. Skilled ingot practice prevents the segregation of the metalloids and the inclusion of foreign solids and gases. And here is the result—an alloy that is homogeneous—in which every portion of the metal is the same throughout and equally resistant to rust—a resistance that is surpassed among the ferrous metals only by the stainless irons and steels.

That briefly is the real answer to the question—"Why should we pay more for Toncan Iron Pipe," and after a trial in service has proved its economy, its real worth is quickly apparent.

Write for a copy of the new edition of "Pipe for Permanence."

TONCAN COPPER MO-LYB-DEN-UM IRON PIPE

REPUBLIC STEEL CORPORATION

GENERAL OFFICES YOUNGSTOWN, OHIO

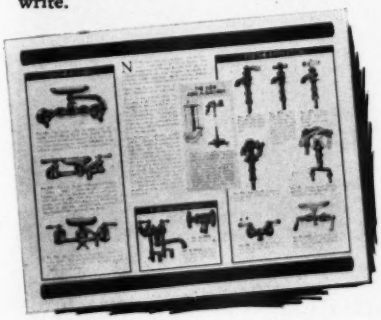
CHICAGO FAUCET NEWS

Issued Monthly by The Chicago Faucet Co., 2700-22 N. Crawford Ave., Chicago, Ill. Vol. 2, No. 4

FAMOUS "DRIP" CIRCULAR NEWLY REVISED

If, as all of us suspect, this is to be a remodeling and replacement year, our latest revision of the tried and proved "Drip" circular will be a great tool in talking replacements or drumming up this kind of business by mailing it out or enclosing it with letters and statements.

It's a great little circular covering all the popular Chicago replacement numbers for kitchen sinks, bath tubs, laundry tubs, and lavatories, and it also places strong emphasis on the basic design and all-embracing quality that sets Chicago Faucets so distinctly apart. If you haven't a supply, just write.



FACING PAGES OF NEWLY REVISED DRIP CIRCULAR

STILL MAKING HISTORY

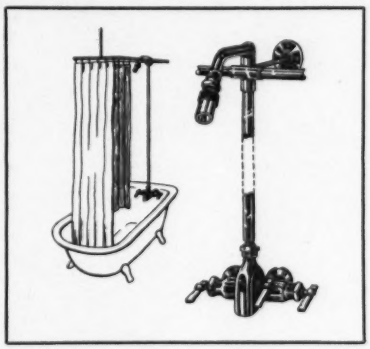
Those who saw "Wings of a Century" at the Chicago World's Fair saw a pageant that sent the thrills creeping up and down the spine.

While we admit that faucets are not as dramatic as the sainted old engines and steamboats and early aircraft that crossed the hippodrome of "Wings of a Century," still we can't help picturing such a pageant in terms of faucets, and in the final episode of the drama we see a great history making achievement in a faucet labeled 444.

Yes, one faucet has that happy combination of quality at a price. Our glib contemporaries in the automotive field would probably give it some subtle appellation like "The lowest priced faucet in the fine faucet field." Working along the same line of thoughts Phil Baker called himself "The most economical comedian in the low-price field." But we're not talking about comedians, we're talking about 444.

PROFITS IN STORE FOR HUSTLERS

BETTER SHOWERS WITH LESS WATER



That is the secret of the Brownie Shower Head's big success. It's sprightly stream has taken the indigo out of many a blue Monday, and still more remarkable is the fact that this full, lively shower is accomplished with less water as proved by actual test. Those who don't give a whoop how much water they use prefer the Brownie because it gives a better shower. Those who do care what the water costs use it because it does a better job and saves money.

Since everyone is in one class or the other, the Brownie sales keep on climbing.

Don't think of the Brownie as simply a shower head. It is a part of a full line of Chicago Faucet shower equipment such as the popular Add-A-Shower, illustrated, and other types of Add-A-Showers which conform to all requirements. Ask for complete descriptions and prices.

The Fast Selling Brownie

It doesn't make any particular difference whether it's the CWA, AAA, NRA, PWA or just the swing of the pendulum,—the fact remains that people are sitting up and taking notice—regaining their old pride in their homes—thinking about improvement—thinking about fixing up things and bringing them up to date.

And it is true (if strange) that when people have the desire they seem, in some mysterious way, to find the dollars to gratify that desire.

When the thought of fixing up strikes the home owner or building owner it's apt to run along the line of faucets, showers, fixtures, and the like. These are things that call attention to themselves—things that are thorns in the flesh when they don't work right, and—just the converse—real sources of delight when they do.

So unless we miss our guess this will be a year of real opportunity for faucet replacement and bathroom remodeling for the plumber that is on his toes and hustling.

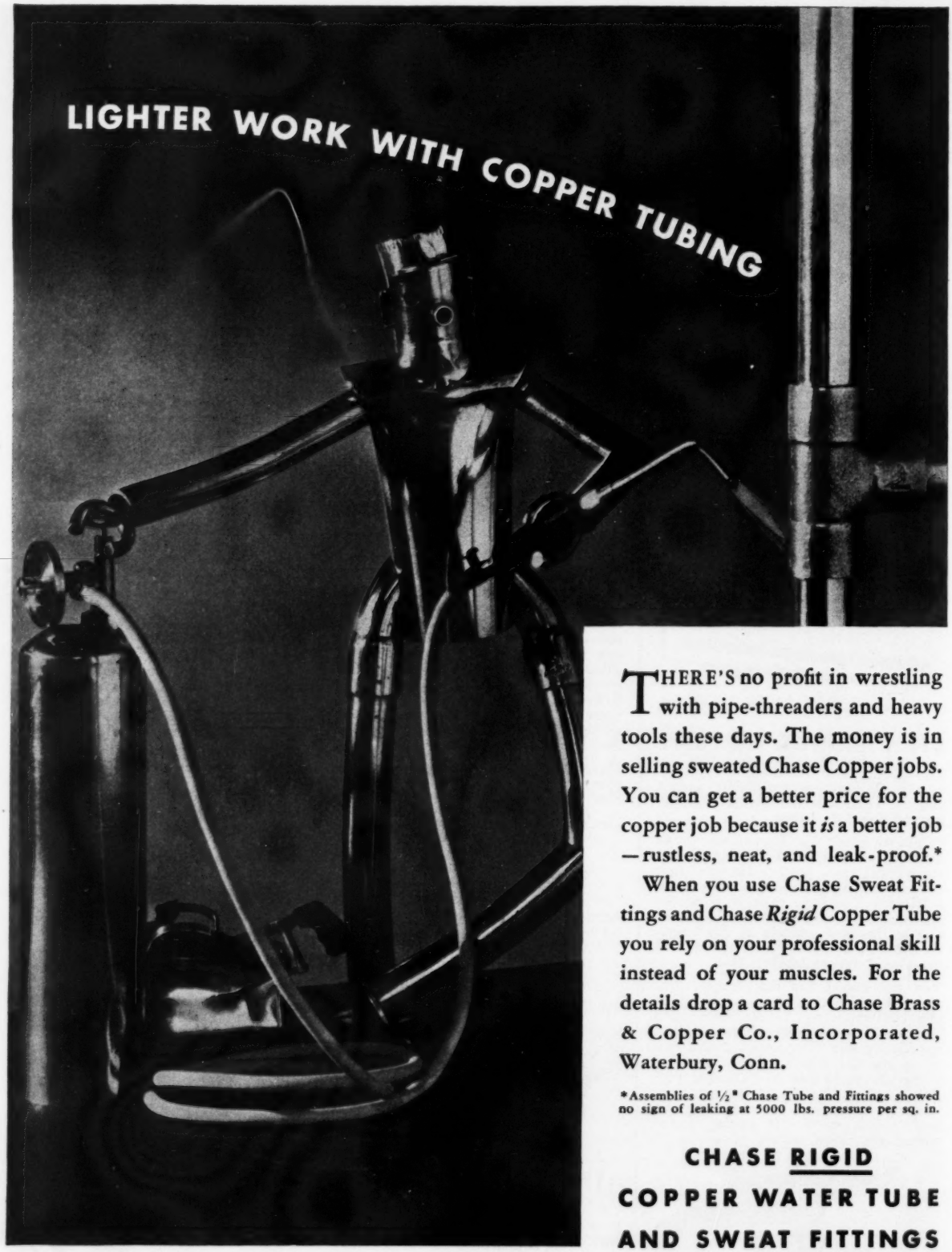
It is a well known fact that even in good times, the consumer's dollar can't hold out to gratify his every desire—particularly in this modern world where page after page of advertising is trying to build up and broaden that desire. So "hustle" is the word if you want to get your share of that dollar.

Watch the automotive industry and its high keyed distributing organization. Right now the big auto shows are on and the advertising is being poured down the public's wide open mouth. That's the competition you're up against—not the plumber down the street, but the auto dealer, or vacuum cleaner dealer, or refrigerator dealer across the street. Are your windows trimmed as well as their's? If not get our latest display material. Are your products as enticing as their's? If not post up on our new beautiful replacement faucets, add-a-showers, etc.

Your potential customer is trying to decide whether to improve his kitchen, bathroom, hot water supply, heating plant, etc., or whether he should fall for one of the new knock-kneed Pontolets or jumping-ride Plymlers. And, frankly, his decision is being so unduly influenced that you have to be mighty fast of speech and fleet of foot to get even a part of your share of deserving dollars.

STRAIGHT-EIGHT HAS OPEN ROAD

If there ever was a faucet in step with these knee-action tear-drop-design times, it's the appropriately named, "Straight-8, Streamline" Classic. Standard-bearer for the line is the No. 540 illustrated. It is only 3¼ inches high and adjustable from 7¼ to 8¾ inches. A popular variation of the same design is the No. 561 with third handle for use where hot and cold soft water and cold city water are available.



THERE'S no profit in wrestling with pipe-threaders and heavy tools these days. The money is in selling sweated Chase Copper jobs. You can get a better price for the copper job because it *is* a better job—rustless, neat, and leak-proof.*

When you use Chase Sweat Fittings and Chase *Rigid* Copper Tube you rely on your professional skill instead of your muscles. For the details drop a card to Chase Brass & Copper Co., Incorporated, Waterbury, Conn.

*Assemblies of ½" Chase Tube and Fittings showed no sign of leaking at 5000 lbs. pressure per sq. in.

CHASE RIGID
COPPER WATER TUBE
AND SWEAT FITTINGS

Good brass and copper products.

CHASE

NRA WE DO OUR PART

TAKING IT EASY. "Why break your back threading pipe?" says the Chase Copper Tube man, "Sweating connections the Chase way is better—that is, for a man who knows his business." He ought to know. He's all sweated together himself from Chase products.

YOU WILL FIND IT IN THE "Standard" CATALOGUE

Modernization is in the air. It means more money circulated—it denotes confidence in the future.

The "Standard" General Catalogue has been modernized up to the minute. A new revision, consisting of 144 black and white pages and 8 in color—152 pages in all—about one-half of the book, has just been issued.

This Catalogue, now more convenient, is also enhanced with better illustrations. Modern wall treatment, individually selected for each illustration, accentuates the beauty of each fixture and visualizes the distinctive effects obtained in present-day, moderate cost materials. These illustrations, giving the complete picture of modern fixtures in modern settings, should be most fittingly and forcibly helpful in your modernizing sales work.

Increased business means intensified, intelligent selling which in turn requires the most modern and effective sales tools. You cannot take a showroom to your prospects, but you can take this most complete modern Catalogue. Put it to work as your best salesman.

No matter what you want — the latest bath tub...lavatory...closet... kitchen sink...hospital fixtures... hotel fixtures—

LOOK FOR IT IN THE "Standard" CATALOGUE

Standard Sanitary Mfg. Co.

PITTSBURGH, PA.

Division of AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

The 1934 CATALOG is out.....

Have you received yours?

YOU need this new 1934 edition of the PLUMBING AND HEATING CATALOG Today . . . and every other day, for that matter . . . You have no way of knowing what mail or what 'phone call will bring an inquiry for something that you haven't handy in stock . . . or that you are not familiar with . . . and it would certainly be an unfortunate break if you were unable to give a customer complete accurate information on some special job. Your buying information is complete only when the PLUMBING AND HEATING CATALOG is immediately accessible on your desk.

In the new 1934 edition is listed more than 1,300 items used by plumbing and heating men. Under each item you will find the trade names and the names of the manufacturers. Many of these items are shown in the Catalog Section and when they are, a page reference is given. The entire section is classified and numerous cross references are given so that any item you are looking for can be located immediately without delay.

Included also is a list of all manufacturers, over 4,000, who make items used in the plumbing and heating industry, together with street addresses.

A Catalog Section, which is a collection of the catalogs of hundreds of manufacturers, makes your buying problem an easy one. Here you are able to locate the sources of materials. Here in one big consolidated catalog, indexed and cross-indexed, you will find illustrated nearly every item you will ever have call for.

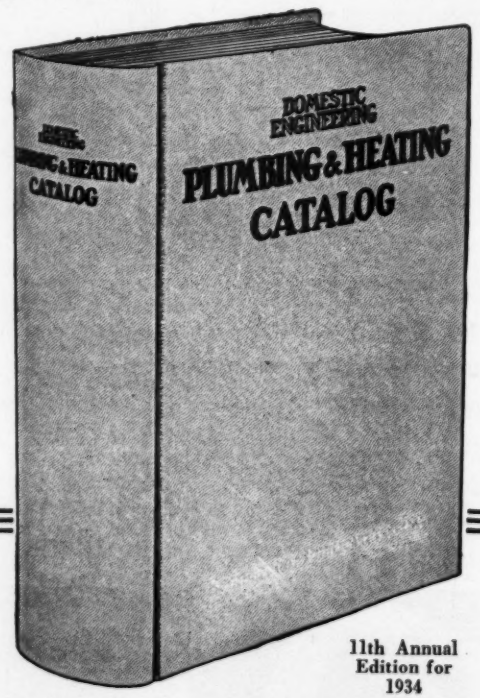
Buying information pertaining to beer dispensing equipment, installed and serviced by the plumbing and heating industry.

The Engineering Section contains over 100 tables, rules, charts and diagrams commonly used by plumbing and heating men.

Where else can you find, under one cover, such a wealth of material that can be used by you in your every day buying? For those who need to keep in touch with buying information, the PLUMBING AND HEATING CATALOG is indispensable. Often it is the only source of reliable accessible data on manufacturers, whose products you will have to buy during the year.

For the past ten years, DOMESTIC ENGINEERING PLUMBING AND HEATING CATALOG has been a standout in the plumbing and heating industry, being the only book of its kind in this field.

Send for your copy today. Use the coupon below. Its price is $7.50.



11th Annual Edition for 1934

DOMESTIC ENGINEERING PLUMBING & HEATING CATALOG

DOMESTIC ENGINEERING PLUMBING AND HEATING CATALOG,
1900 Prairie Avenue, Chicago, Illinois.

We hereby authorize you to enter our order for one copy of the 1934 edition of Domestic Engineering Plumbing and Heating Catalog for which we agree to pay you $7.50 upon receipt of the Catalog.

Firm ..... Mark book for Mr. .....

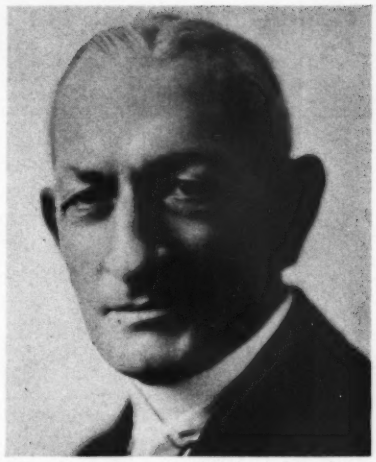
Street Address ..... City and State .....

Signed by .....

A FIRE HYDRANT AND A BOTTLE OF BLUING

CHECK-UP ON A CROSS-CONNECTION!

Domestic water pollution presents a serious problem for many of our cities. A new type of toilet appears to be the answer, revealed here.



Mr. A. A. Bennett, Chief of Plumbing Division, Los Angeles

Out in Los Angeles an alert home owner, shaving in his bathroom, noticed water receding from the toilet bowl. Yet the toilet had not been flushed!

The engineer—that was his profession—glanced out the window and saw a water crew repairing a broken fire hydrant. He figured immediately that a drop leg vacuum was being set on his water supply line, causing a reverse flow and syphonic action through the flushometer valve. That meant a constant danger of contamination—*even in drinking-water!*

The call to the kitchen

Alarmed, the engineer quickly completed a series of experiments, and then called to his home leading health and sanitary authorities of Los Angeles. These men, including Mr. A. A. Bennett, Chief of the Plumbing Division, gathered around the kitchen sink.

"Gentlemen," said the engineer, "the water supply of this community is in danger, whether or not you are aware of it. Watch what I have to show you. Bluing from this bottle has been placed in the toilet upstairs. Watch! I'll syphon it through the system and into this glass!"

Out of the faucet came blue water!

* * *

Anything can happen to health when cross-connections and back syphonage cause pollution. As a direct result of the Los Angeles incident, a city ordinance was passed to prevent pollution from such causes!

But the Kohler Integra safeguards against pollution more effectively than any law!

Actual tests and what they showed

Mr. Bennett, who witnessed the engineer's tests, made some of his own later—with the Kohler Integra. Here is his own record of what happened:

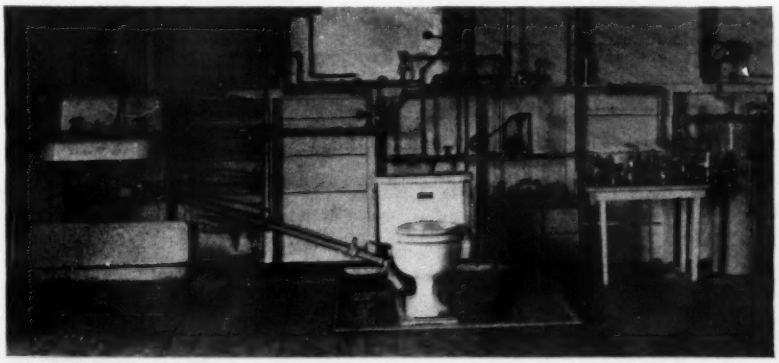
"From a plumbing inspector's standpoint, the efficient washout and cleansing effect of the Kohler Integra appeal to me as functions having unusual merit. But paramount in my mind is the question of back-syphonage. Our various tests with this fixture and the ball-cock, both in their normal condition and with valve seats mutilated, *gives every evidence of safeguard against water pollution!*"

Mr. E. R. Longley, Assistant Senior Plumbing Inspector, Los Angeles, also was present at various tests, and has this to say about the Kohler Integra:

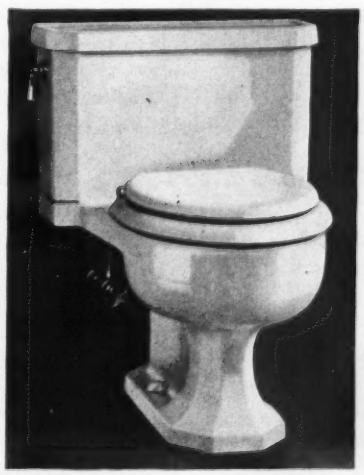
"A Kohler ball-cock taken from stock and placed in our hands withstood perfectly every test, and proved it to be *immune from every danger and menace pertinent to cross-connection and water pollution.*"

For the complete interesting story about this great step forward in the plumbing industry, and what it means to you, write Kohler Co. *Founded* 1873. Kohler, Wis. *Shipping Point,* Sheboygan, Wis. *Branches in principal cities.*

Of all one-piece toilets, the Kohler True Syphon Jet Integra has the most advantageous features. 18% larger passageway than other one-piece toilets . . . large water area with less soiling space . . . 3" deep water seal . . . no back syphonage . . . strong, cleansing rim flush . . . smooth, easily cleaned surfaces . . . and harmonizes with Kohler Matched Fixtures.



The laboratory set up by Mr. Bennett, where tests were conducted which demonstrated conclusively how the Kohler Integra safeguards homes against water pollution.



Thanks:
It struck me so forcibly that your last issue was gotten out in such a fine way, that I want to compliment you.
T. H. P.,
New Jersey.

BETWEEN OURSELVES

Conventions Start

CONVENTIONS are here again and from evidence given so far, 1934 will set up a good record for attendance and an excellent record for interest shown by those who attend.

Want to Learn

THE comment was common at the Illinois convention that the delegates, and even visitors, attended every session and remained through to the close. It was a testimonial both to the many interesting subjects brought up at the convention and to the eagerness of those present to get a clearer view on those subjects which the new year has brought to the front.

Out With the Cowboys

A LIKE record was set at the Wisconsin convention, well attended and a wide variety of interesting subjects. And from South Dakota, the other state to meet in January, a reader writes to tell us it was called a "round-up." Some South Dakota plumbers, we were told, "know what a real round-up is and the eastern radio cowboys have made the round-up and the doggies very popular. We hope this will be the last round-up under the old order of 'doggy eat doggy' and that from now on, we will meet on a more co-operative basis."

Ready for Market

THEN, looking ahead, we find the American Society of Heating and Ventilating Engineers meeting early in February. It has special significance this year because it is coupled with an exposition of automatic heat and air conditioning products. That new industry has won such a front-rank position for itself in the minds of both manufacturers and dealers that this exposition is anticipated because it will reveal to many the new and attractive products just developed to serve that market.

Public Wants It

TWO years ago, when this exposition was held at Cleveland, the disclosure of early preparations to serve the new market was a stimulating influence which spread throughout the whole industry. Now with two years of experience in both engineering and sales behind, the industry should find this exposition a powerful impulse to meet the undoubted interest which the American public is taking in better heating and air conditioning.

A Reader Service

IN recognition of this important development, our readers will find our AUTOMATIC HEAT *and* AIR CONDITIONING section a mine of helpful information. Greater in size, it both brings to our readers a definitely constructive business service along sales and engineering lines and testifies to the interest with which our special and distinctive editorial helps are being met by interested readers.

Better Business

FEDERAL funds are beginning to make their influence felt. Particularly in farming communities, the dissemination of government money is being followed by definite business progress. The farmers with funds for curtailing crops, or for keeping acreage idle, are paying off debts and taxes. The receivers of that money, of course, pass it along and the familiar chain of payment, spending and purchasing is under way.

Farmers Are Buying

READERS tell us of many examples of this kind. Water systems and better standards of home convenience are resulting and you'll find this significant development, told in a leading article.

Your CWA Problem

ON the other hand, the expenditure of government funds for relief through the CWA has attracted much criticism—not of the purpose of relief but of the methods which are being followed. A real contribution to that problem—in which so many thousands of our readers are interested, will be found on Pages 23 and 125. Jere L. Murphy gives you a wealth of definite information with which to take up this problem with your local authorities.

Acting on Codes

AND January was notable for definite code developments. Leaders in the contracting, wholesaling and manufacturing branches tell you what was done and what it means.

For Your Use

AN interesting year is ahead and our efforts are to serve you with definite business helps. Many readers tell us we are doing that. This new issue is offered as another proof and for your use.

Your Editor

THE HOYT LINE
EVERDUR TANKS
THE STRENGTH OF STEEL THE DURABILITY OF COPPER
PLENTY OF WATER
ANYTIME FOR WASHING DISHES BATH
Hoyt
". . . see that tank! It's EVERDUR"

Window display of Hoyt Automatic Water Heaters, manufactured by Hoyt Heater Company, Oakland, California. Note the reference to Everdur Tanks and the cutaway view of an all-welded tank of this rustless metal.

Feature the Everdur Tank in the water heater you sell. Everyone appreciates *clean* hot water!

YOU have a convincing sales point in non-rust Everdur Tanks. Most of your customers know about rust and how it causes water heater troubles ... discolored water, clogged outlets, inefficient operation, and eventual tank failure. All of them want hot water that is rust-free, not only when their heater is new, but indefinitely. They can't help being impressed when you tell them that the leadership of the industry . . . 34 of the foremost manufacturers of range boilers and automatic heaters . . . standardize on Everdur for *all* their rust-proof models.

Everdur is an exclusive Anaconda metal. It combines the corrosion-resistance of copper with the strength and weldability of steel. Everdur Tanks can be built to the most rigid specifications, since Everdur is welded as readily as steel ... and as perfectly and economically. Yet *it is rust-proof!* For Everdur is a copper alloy ... nearly all copper, with silicon and manganese added to improve physical properties.

May we send you additional data and the names of heaters which are equipped with all-welded tanks of rustless Everdur? Write to The American Brass Company, General Offices: Waterbury, Connecticut.

ANACONDA
From mine to consumer

See our Exhibit in Space No. 45, Third International Heating & Ventilating Exposition, Grand Central Palace, New York, February 5th to 9th, 1934

NRA

EVERDUR METAL *for* TANKS

STRENGTHENED COPPER . . . A PATENTED ANACONDA ALLOY MADE BY THE AMERICAN BRASS COMPANY

65 SECONDS TO CUT OFF 4″ PIPE

"Toledo" No. 40 Automatic Pipe Cutter, Capacity 2″ to 4″ Inclusive

Remarkable pipe and conduit cutters produce clean square edge cuts without burr and chamfer the outer edge of the pipe neatly if desired making it easy to center and start the threading dies on the pipe.

Knives are fed automatically and require no attention from the operator except to see that they are kept sharp. A single hand wheel given a part turn sets the knives for cutting or the quick return after the pipe is cut off.

When operated by a "TOLEDO" Standard Power Drive 2″ pipe is cut off in 20 seconds, 4″ in 65 seconds, 4½″ in 1½ minutes, 8″ in 2 minutes.

Sound mechanically. Operated by a scroll. No springs to weaken or get out of order.

Special knives to bevel pipe furnished on special order. Quickly produce neat true bevel on all sizes.

Reasonably priced and built for long service.

Note Clean, Square End Cut Without Burr

Pipe Cut Off with Special Beveling Knives

THE TOLEDO PIPE THREADING MACHINE COMPANY

TOLEDO, OHIO **NEW YORK OFFICE & DISPLAY, 72 LAFAYETTE STREET**

"TOLEDO"

SUPERIOR PIPE TOOLS

OUR INDUSTRY

February, 1934

January Sees Action on Codes

Action on codes for the plumbing industry came with a rush in January. General Johnson signed the manufacturers' code but with a 60-day stay on the vital price differential clause which made his approval unacceptable to the manufacturers. The wholesalers filed their code without a clause for which the plumbers had fought, so the latter countered by eliminating in their code any reference to the wholesaler and filing a few hours later. Also the plumbers filed a brief attacking the wholesaler code on 28 points. Then a few days later, the plumbers protested vigorously against the cast iron soil pipe code at a rehearing on that code, the signature of which last fall stirred up so much opposition.

To round out a month of action, the construction industry code, to which the master plumbers and heating contractors are to subscribe, after being signed by General Johnson, was turned down by President Roosevelt who wants it to include a minimum scale for skilled mechanics. For this point, the master plumbers as well as organized labor had fought.

On this and the two following pages, leaders in the three branches discuss these significant January developments.

President Barrett Talks on Codes

At the Illinois convention, President Robert J. Barrett of the National Association of Master Plumbers spoke on the present code situation. The membership of the national association is now practically 17,000, a 517 per cent increase in membership since last July and a figure which takes in only those who have paid their dues.

The plumbers' code work started last April, resulting in a special committee being named which developed the vertical code for the whole industry presented at New Orleans in June. This plan for a code which would embrace the three branches was not accepted by the other groups. The following months witnessed the intensive checking of the three codes until they reached their present form. Mr. Barrett feels that the manufacturers' code as finally submitted is representative of the energetic effort made to secure codes of definite value to each branch. It is the only code so far submitted in which price differentials are fixed.

The master plumbers were early told to relate their code work to that of the Construction League of the United States. Some delays developed and the master plumbers in particular were not in sympathy with the minimum wage scales suggested. They wanted a fair minimum rate for skilled labor as reflected in the recommendations in their own code. In it, the country is divided into three zones, with a minimum rate of $1.00 in the south, $1.10 in the central states and $1.20 in the northern states. He feels that master plumbers can compete on this level. The established rate in Washington, for instance, is $1.50. In competition, the $1.10 level could be met but not the 30 or 40 cents which some irregular contractors now pay.

Organized labor opposed the Construction League schedules. Although General Johnson signed the code, protests were carried through to President Roosevelt who decided that minimum rates for skilled mechanics must be in all codes. The President is understood to have said that the master plumbers' code should be pushed through, as it is a shining example to all others in the construction industry as it reveals a group of employers fighting to give labor a livable wage.

In discussing relationships with wholesalers on code problems, Mr. Barrett pointed out that a great deal of dickering had been done in an effort to get through co-related codes carrying a reciprocal rule by which wholesalers would sell only to licensed and established contractors who in turn would purchase only from wholesalers. Some wholesalers were not friendly to this plan, several he felt wishing to sell direct. Such a rule was submitted to N. R. A. Mail order influence was represented and when the rule was opposed, Mr. Barrett feels the wholesalers accepted this condition, whereas he believes that such a rule by more vigorous effort could have been secured.

(Continued on page 126)

This Month's News

Flentje Analyzes Codes

At the Wisconsin convention, Ernest L. Flentje talked frankly about code developments. He had been a member of the advisory board selected by the N. R. A. to relate the plumbing codes. This is the only industry for which the N. R. A. appointed advisors to secure cooperative action. From October to January, this board worked toward that objective. When the wholesalers decided to file a code not in accord with the desire of the master plumbers for a reciprocal rule, the board recognizing its failure to secure related action, resigned. Mr. Flentje was then employed by the National Association of Master Plumbers as its code advisor.

Mr. Flentje recalled that before N. R. A., the industry was rife with policies inimicable to cooperation. He felt that the federal government had recognized the plumbing industry as unique in appointing advisors to secure coordinated action. Such recognition came because of the importance of plumbing to health.

He said manufacturers have worked wholeheartedly for a good code and he feels that nothing in their code is harmful to the retailer. That code is predicated on the assumption that both the regular and irregular distributors should compete on an equitable basis.

He feels that a reciprocal rule is needed as between master plumber and wholesaler, this rule being the keystone of the arch which it was planned to build on the manufacturers' code. If products reach the wholesaler and the mail order house at similar levels, if they must be turned over to the retailer or to the retail branch on a comparable differential and if the retailer must take his costs into consideration when selling, the result would have been equitable competition.

He recalled that when this rule was first proposed, President Barrett broadcast a request to members to live up to the spirit of this proposal. He said that many master plumbers had done so, so that it is felt the reciprocal rule was proved to be workable. However, Mr. Flentje stated that some wholesalers refused to face realities and preferred, he thought, to continue irregular sales methods.

The wholesalers at one time or another have filed 12 different codes. Some of their committee members were sincere in working for plumber cooperation but he feels that the majority did not want the reciprocal rule. Mr. Flentje feels that a wonderful opportunity under government direction for putting this industry on a solid and profitable basis was thus thrown away, when on January 13 the wholesalers decided to go ahead alone. He spoke of the 28 objections filed by the master plumbers to the wholesalers' code, expressed doubt that this code would be approved and referred to the possibility of the wholesalers throughout the country repudiating the action of their committee.

Under the plumbers' code as filed, the master plumber can buy from anyone. But anyone selling plumbing comes under the retail code authority. Wages, cost of material and overhead must all be properly reckoned by the retailer under threat of fine and imprisonment. It becomes mandatory for a master plumber to keep proper bookkeeping records as he is not allowed to sell below cost. Mr. Flentje urged support of Mr. Barrett and the other national officers, spoke of the possible effort to divide the master plumbers and again urged united action behind President Barrett.

In the discussion, Mr. Flentje answered various questions. The joint national committee of wholesalers has 22 members named by various associations, the active number of members being nine. He told of rapid increases in soil pipe prices since that code was adopted and of the brief filed by the master plumbers against that code at the rehearing held on January 16. If the items of overhead now set up in the plumbers' code are approved, a determined differential for such costs would be included in the code. Under the manufacturers' code, all customers pay the same price with a 5 per cent allowance for volume. The code sets a differential between the wholesaler and retailer levels.

Tells of Manufacturers' Code

An interesting and instructive interpretation of the manufacturers code was given at the Illinois and Wisconsin master plumber conventions by Lucius P. Chase of the Kohler Co. Walter J. Kohler of that company is head of the manufacturers' committee and Mr. Chase has been its attorney.

After pointing out that 150 manufacturers of brass, enamelware, vitreous china and seats were concerned, utilizing different means of distribution, Mr. Chase said the finished code as submitted to the N. R. A. would build up the industry.

The manufacturers' problem was complicated by the great drop in sales, an 80 per cent decline in some cases while some manufacturers lost 40 cents on each $1 of sales. He estimated total losses to manufacturers in 1932 as $20,000,000 with a one-third reduction in resources.

With the majority of sales made by manufacturers to wholesalers to contractors, it was determined to establish an equitable basis of competition with other distribution systems. This had been done by the code in which an equality of manufacturing practices, cost methods and wages was set, by establishing a fair differential for wholesaling costs and by barring sales below costs. This would result in fairly equalizing competition with the mail order and chain stores and prevent the established distributors from being asked to absorb losses which resulted from cuts by volume seeking manufacturers and by failure to charge properly for essential manufacturing and wholesaling costs.

With this equalization re-establishing a fairer basis of competition, Mr. Chase believes the relative merits of the two plans of distribution can be properly determined for the benefit of the public.

Since General Johnson withheld approval for 60 days of the clause setting a differential between wholesaling and retailing prices, the manufacturers were not accepting the code as signed but intended to fight for the adoption of the code as submitted.

in Brief —

Speaks for C. S. A.

W. E. McCollum, secretary of the Central Supply Association was at the Wisconsin meeting and spoke impromptu following Mr. Flentje's talk. He said he could, of course, speak only for the Central Supply Association. He stated that no wholesaler in that association had any intention of changing his method of distribution. He pointed out that for 5½ months, wholesalers had tried to secure a code and had worked with the master plumbers.

The reciprocal rule proved to be the main difficulty. When first submitted, his members had favored it, although recalling the legal action taken in the past by the government, the question of the legality of the rule naturally arose. However, the Central Supply Association voted approval of the rule provided the government recognized it as legal. He said that the N. R. A. attorney and different advisors were fairly favorable to the rule, some of them believing it might be acceptable because of the health relationship. However, higher officials would not approve it and various of the N. R. A. boards had opposed the rule. Under such conditions the wholesalers, finding the rule unacceptable, had filed their code without it.

He did not feel that it was a case of a fight between the wholesaler and the master plumber but instead, a fight by the manufacturer, wholesaler and master plumber working together to benefit the whole industry. As representatives of the established method of doing business in this field, he felt the three groups should work together. He recalled that there are two gross margins in this system of distribution against one in the mail order plan. Mail orders have their advantage in buying but not in their expense of doing business. Consequently the buying position is the important one to consider.

Mr. McCollum told of the services performed by the wholesaler in proof of the economic necessity of the wholesaler. The latter carries from 7,500 to 15,000 items in stock secured from 200 to 400 sources of supply. Probably two-thirds of these items are bought from 50 to 60 manufacturers. About one-third of the items are slow moving in nature but must be carried to permit complete service.

C. W. A. Criticized

CONSIDERABLE resentment has been aroused among the master plumbers throughout the country over the policy of the C. W. A. in permitting towns and cities in the various states to employ journeymen plumbers direct to investigate and repair leaks in the water works system, going for that purpose into the street and also into private homes and buildings to repair faucets and closet tanks.

The master plumber is in hearty sympathy and accord with the program undertaken by the Civil Works Administration to relieve unemployment, but feels that inasmuch as government funds are being spent, he is deprived of the opportunity of participating in any way in the benefits

(Continued on page 126)

John J. Vogelpohl

John J. Vogelpohl, former president of the National Association of Master Plumbers and for many years one of its outstanding leaders, died at Miami, Fla., on January 17, following an operation for appendicitis. He was buried at Cincinnati, Ohio, his home city, on January 22, the services being attended by many of his associates in local, state and national organization affairs.

John J. Vogelpohl

He had left for Florida when not feeling well and in the hope of regaining his health. Enroute, his condition became more serious and as soon as he reached Miami he was taken to a hospital for an operation.

Few men have left a greater imprint upon the plumbing industry than John J. Vogelpohl. He combined dynamic energy with acute mental powers and whether in office or out, he was the valued councilor of those who were working to upbuild the industry.

This capacity for leadership carried him through local and state offces to the presidency of the Ohio association and in 1923 to the vice-presidency of the National. At West Baden, Ind., in June, 1924, he was elected president of the National and during his administration, he traveled thousands of miles in order to strengthen that organization. He was a splendid speaker and did not spare his strength in constant traveling in order to reach groups of plumbers in many sections. He presided at the Portland, Ore., convention, in June, 1925.

He then served as a director during 1925, 1926, 1927 and 1928. In 1930 he took up the chairmanship of the scholarship committee, holding that post since then and being renamed only recently by President Robert J. Barrett for this year. He found this work greatly to his liking and worked out many plans which have insured the success of the scholarship program for the sons of master plumbers now operating at Carnegie Institute of Technology.

His activities gave him a wide acquaintanceship with leaders in all branches of the industry and his retention of their friendship is a testimonial to the sincerity, energy and fairness with which he worked for the improvement of the industry.

He is survived by his widow, Ida B. Schnieders Vogelpohl, by three daughters, Mrs. Helen C. Meyer, Mrs. Ruth C. Schuch and Stella M. Vogelpohl and by two sons, Robert E. and Stephen M. Vogelpohl.

Federal Loans *to Farmers now are being made and already have renewed*

Rural Purchasing Power

"We have had an improvement in our water system business. We consider this a line that has a big future."

Minneapolis, Minn.

"Up to the present time, we have sealed slightly more than two million bushels of corn in McLean County, Illinois. The first loan was made on December 5. We estimate that there will be another million bushels of corn sealed. You can easily estimate from this, at the rate of 45c per bushel, how much money will come into McLean County from the corn loan itself. On the two million bushels which has already been sealed, practically all of this money is now in the hands of the farmer.

"The money which has come in from these corn loans is being used by farmers to pay small bills, clean up indebtedness and to purchase the necessary things which they have been wanting to buy. I would say that practically all of it is going for useful articles needed on the farm and in the home."

R. J. Laible,
Farm Adviser,
McLean Farm Bureau.

"A good many of our wholesalers are selling more water systems during these months than they have for many years and we attribute this increased business to the easing money situation which the Administration is bringing about through various relief agencies."

Davenport, Ia.

"We have sealed and loaned money on one million six hundred thousand bushels of corn totaling about three-quarters of a million dollars. Most of this money is being put in cirment and also to pay up back debts contracted previously. The use of this money is serving two direct purposes. One, to improve their buildings and machinery and the other to improve their homes. The feeling is much better with the people and the future of their business."

C. E. Gates,
Farm Adviser,
LaSalle County Farm Bureau.

A CHEERFUL Iowa grocer rang up a sale. His cash register jingled merrily. Scarcely had the customer left the store when the grocer reached for the phone, called up his wife and said, "That's the sixteenth farmer who paid his bill today. . . . Guess you might as well buy that new coat you've been wanting, Emma." And so the U. S. corn loans in Iowa began to flow.

Emma bought the coat. Her merchant paid $200.00 on a car he had seen. The auto dealer bought himself a new suit. His clothier went around the corner to purchase a radio-phonograph he had long admired. The music dealer capitulated to the oil burner salesman who had long pursued him. The heating dealer decided on a trip to Florida.

More than 35,000 corn loans averaging nearly $700.00 each, had by mid-January launched 35,000 such buying cycles. Thus runs the story of a Des Moines, Iowa, newspaper.

As for our industry, a letter dated January 19, from a water supply manufacturer states, "A good many of our wholesalers are selling more water systems during these months than they have for many years and we attribute this increased business to the easing money situation which the Administration is bringing about through various relief agencies."

The purchasing power of the rural districts is being renewed in a very positive manner. In considering Federal loans to farmers, it should be recognized that the farmer is not the only one who is put back in the purchasing class. As pointed out in the foregoing paragraphs, the ones who receive his money become purchasers. Accordingly, although the farmer in this instance is the first one to receive the money, in its circulation, it reaches all others with whom he comes in business contact. The buying tendencies and desires of these other consumers are given expression just as are the farmers.

This makes the home owner on the edge of town who is not served by the municipal water supply, as good, if not a better water supply system prospect than the farmer himself.

Information from Washington is to the effect that full cooperation of American farmers in production-adjustment programs launched by the Agricultural Adjustment Administration will mean the addition, in the form of cash benefit payments to farmers, of more than eight hundred million dollars to the farm income for 1933 and 1934.

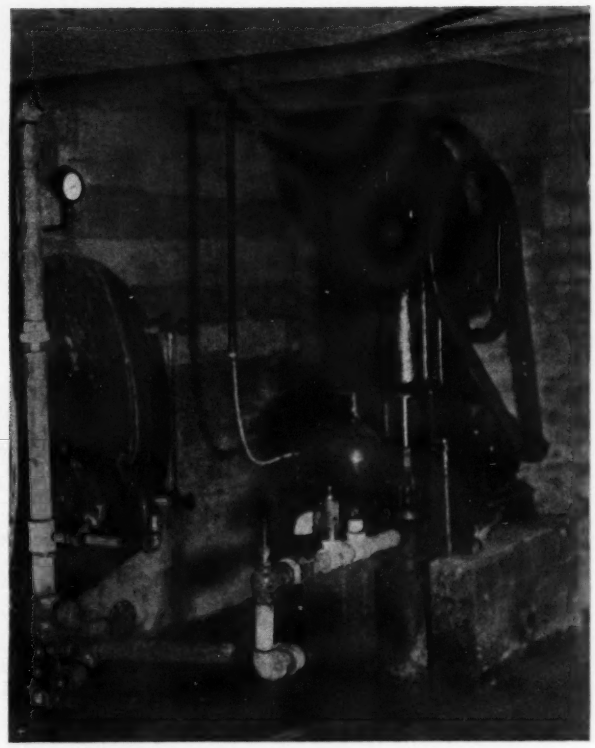


Fig. 1—This illustration is an example of a deep well job. It is in a home near a large city but it is just beyond the water mains

Water Supply Systems

Some Pointers on the Installation of this Equipment

THE following news item appeared in the Ames Daily Tribune, January 10, 1934: "Story county farm women want, more than any other repair or improvement, water systems installed in their homes, if the 200 banks so far returned in the CWA rural housing survey are a fair sample. A high majority of the returned blanks indicate that the desire for such an improvement ranks higher than any other, even higher than that for electrical systems, according to Mrs. Lila W. Pfantz of Ames, who is in charge of the Story county survey of rural housing under the federal works project. About 1,500 returns from Story county are expected before the closing of the project January 27th."

Incidentally similar surveys are being made by the Government in many other counties.

Six hundred thousand farms are connected to central station service at this time. Another 400,000 to 450,000 own individual electric light plants. In addition to these, thousands of families are living in subdivisions, suburbs, and small hamlets having electric service but no central water supply system. All of these are potential customers for automatic water supply systems. Most of these people realize the advantage of running water and will install this equipment as soon as their pocketbooks will allow it.

Water supply systems may be either of the deep or shallow well type. A shallow well system may be used if the depth of the water generally is not over twenty-two feet from the pump. This depth is specified because as the parts get loose, due to wear, trouble may be encountered if the pump is required to work at a greater head of water. Then there is always the possibility of the water level going down lower in times of dry weather, a condition which has existed in many sections of the country during recent years. If the unit is placed in a pit, it is much easier to dig several feet deeper at the time of installation rather than to have to make a change later on. This may also be desirable where an individual electric light plant is used for power so that a smaller size of motor can be used and reduce the cost of operation. In such an installation the pressure tank also should be placed in the pit to reduce the load on the pump and motor and

have the compressed air elevate the water. A footvalve or the equivalent should be installed in all cases to assist in holding the prime.

The writer knows of a shallow well installed in a pit fourteen feet deep adjacent to a well forty feet deep. This farmer was especially anxious to use a shallow well system at the time of installation because an individual light plant was used to provide the necessary energy. This equipment was installed eleven years ago and has given excellent service. This also shows that moisture will not affect the operation of the motor and the equipment. If a small size of pressure tank is used for both shallow and deep well systems, the motor will have to run several times daily thus keeping it warm and dried out and in good working order. Precautions should, however, be taken so that no water will run directly on it. Such a condition may give trouble.

SIZE OF PRESSURE TANK IMPORTANT

Where the depth of the water exceeds twenty-two feet, it is necessary to install a deep well system. As the cylinder is placed in the well and it is necessary to use a sucker rod, it naturally follows that the pump has to be directly over the well. The most ideal installation is to place the working head and motor in a pit. The pit should be about seven feet deep and five feet round or square to permit easy working when installing or repairing the unit. It may also be placed above ground but that requires a frost-proof set length and a pump house. The pipe lines should be laid underground and below the frost line.

Water systems with a capacity of 225 to 400 gallons per hour are adequate for most farm requirements. Why not install a larger system? The first reason is that the initial expense is less. In each case the cost of pumping water will be about the same. The smaller system will require a smaller motor than the larger one but will have to operate a longer period of time. It very seldom happens that large quantities of water are necessary in a brief period of time. The smaller size of motor also keeps down the connected load as well as prevents peak demands and gives a better distribution of the electric energy requirements. The electric utility serving the rural consumer is especially interested in these factors. The rate of flow of water into the well may also determine the capacity of the system that can be installed.

The right size of pressure tank plays an important part in the satisfactory operation of a water system. On most farms where an open storage tank is located on the haymow floor of the barn to supply the drinking cups, a 40 to 120 gallon pressure tank is ample in size. Where a water system supplies only a modern home a 20 gallon tank may be large enough. For cottages not having an inside toilet, systems having a pressure tank as small as three gallons are satisfactory.

During the past year a water system was installed on a large dairy farm, having a capacity of over 400 gallons per hour. The hydro-pneumatic tank was five gallon in size. During the spring and summer from 600 to 1000 gallons of water were used daily. A great deal of water was used for sprinkling the lawn and garden and washing cars in addition to supplying a modern home, a large dairy herd, hogs, and horses. The pumping unit was worn out in less than six months. This was due primarily to the fact that regardless of where the water was used it was necessary under the existing conditions for the motor and pump to start and stop constantly as it was used and impossible to build up a reserve. A moderately large pressure tank would have corrected this condition and lengthened the life of the unit.

The condition of the old piston and cylinder should be investigated thoroughly when installing a new system. Some dealers even go so far as to insist that a new cylinder and piston be included in every purchase. This will insure positive operation. The piston and cylinder are the heart of the whole system. If they are not good, the whole system is not good. Many a new system has failed or worked only fairly well because the old cylinder and piston remained as a part of the system.

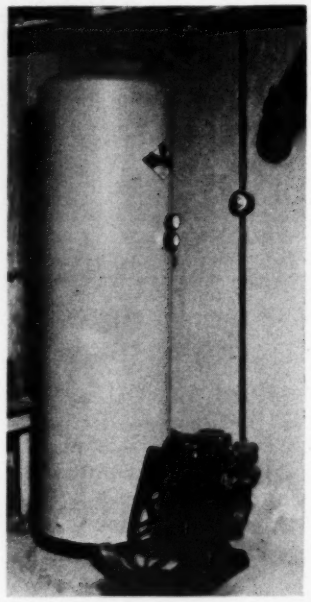


Fig. 2—This is a shallow water system installed in the basement of a modern suburban residence

The cylinder should always be placed at the lower end of the drop pipe. That means that it has to be placed underneath the level of the water. In years past it has been the custom to place at least one length of pipe below the cylinder and have the latter sixteen or eighteen feet above the water, thus the part below the cylinder acted as a suction pump and as a lift pump above it. By placing the cylinder in the water it cannot lose its prime and so is ready to work at all times. The cost of operation is the same in both cases. The only additional expense is the extra sucker rod that is needed.

When Federal benefit payments are added to the estimates on commodity loans and amounts expended in removing burdensome surpluses of pork, butter and wheat from market channels, the Federal Government is committed to put purchasing power amounting to more than 1,250 million dollars into the hands of agriculture by the end of February, 1935.

Wall Coverings!

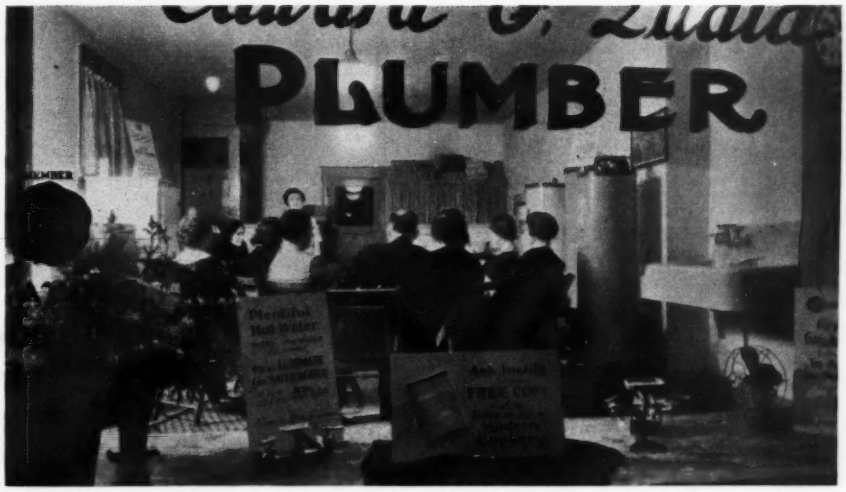


Fig. 1—At the right is a view of a meeting being held in a Philadelphia contractor's showroom, indicating the type of sales efforts being carried on by plumbing groups to promote wall coverings

Sell the Complete Room

Plumbing contractors now are thinking in terms of wall coverings and finished bathroom and kitchen effects in promoting remodeling jobs

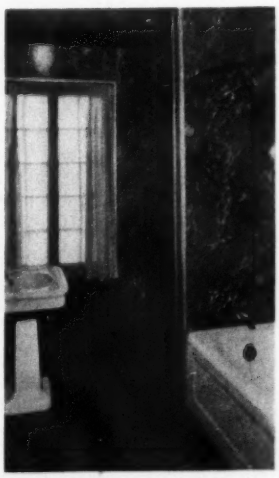


Fig. 2—Here is micarta wall covering used in a bathroom

THERE is an increasing trend among master plumber associations and individual plumbing contractors in the direction of promoting and selling complete bathroom and kitchen remodeling jobs. This is in contradistinction to the practice of years ago when the plumbing contractor was called upon chiefly to furnish and install plumbing fixtures.

This is a logical development which may be traced to the merchandising plumbing contractors' outstanding efforts at selling.

When a home owner thinks of remodeling his kitchen or bathroom, he is first confronted with the item of plumbing fixtures. Accordingly, his first thought is in regard to the effect his proposed alterations will have on the plumbing installation. Very often the first changes, in the mind of the owner, have to do with the plumbing fixtures themselves. The result of this has been to bring plumbing contractors into the remodeling picture first. There are many instances wherein the plumbing contractor called on the job has been able to obtain a contract for himself only because of his ability to understand his part of the work and at the same time advise the owner completely as to how the other phases of the remodeling job might be carried on in bringing about the completed effect desired by the owner.

Not only have many contractors sold jobs as a result of being able to give their customers expert assistance in the production of complete bathrooms, but many other merchandising plumbers have gone so far as to take on the responsibility for all of the other trades on the job in question, as well as their own. In other words, because the plumbing installation in a remodeled bathroom or kitchen represents the basic part of the work, or the starting point, plumbing contractors have found it advantageous to become general contractors.

All of this has called for a thorough knowledge of the different parts which go to make up a complete kitchen or bathroom. The plumbing contractor has been required to think not only in terms of a bathtub or a lavatory, but rather in terms of the final effect desired by the owner. It has been necessary for him to study wall coverings, bathroom arrangements, colors, cabinets and the many other features which go to make up the final job in its finished state.

This has progressed to the point where plumbing contractors' associations have taken up the study as groups in better assisting the individual members to go out and promote and carry on the remodeling projects with which they come in contact. For instance, just recently the Philadelphia Master Plumbers Association took up this subject in their meetings.

In addition, the merchandising group of the Chicago Plumbing Contractors Association has devoted its recent meetings to a study of the many new wall covering materials now available. The president of this merchandising group, George J. Feldkamp has stated that, "The majority of home owners contemplating small modernizing jobs depend upon the plumbing contractor for advice. While some home owners will have a scrap book of advertisements of wall materials, few if any, realize that many handsome effects can be obtained with relatively inexpensive materials."

At the first meeting devoted to a discussion of wall materials, the Chicago Merchandising Group set up for purposes of easy analysis and discussion an eleven point outline or basis of study for wall materials with special emphasis on modernizing. The outline or analysis is as follows:

1. Cost.
2. Installation cost.
3. Availability.
4. Method of application.
5. Merchandising possibilities.
6. Color in relation to plumbing fixtures.
7. Water repelling and absorbing features.
8. Resistance to heat and stains.
9. Resiliency or structural strength.
10. Resistance to the abrasive effect of cleaning powders.
11. Weight and thickness.

The discussions of this merchandising group centered about wall paper, wall cloth, linowall, sealex, rubber tile, wallboard, formica, micarta, metal tile, glass and ceramic tile. In this discussion it was pointed out that there are at least two types of wall paper on the market that are reasonably well adapted for use in bathrooms. One is lacquered or coated over the printed pattern paper and the other is a paper which is impregnated with oil paint. The latter was described as having been used considerably in recent years. The illustration marked Fig. 3 shows this type of wall paper in a bathroom above a regular tile wall.

Fig. 3—At the left, an example of tile and wall paper; Fig. 4—Center, linoleum wall covering used in a kitchen; Fig. 5—Above, vitrolite in a bathroom

As for wall cloths, it was pointed out that these are available with patterns printed on the surface and that the patterns can be related effectively to the colors of the fixtures.

A newer type of wall cloth was mentioned. This is impregnated with the approximate equivalent of oil paint and the pattern is printed on, using waterproof colors. Wall cloths were mentioned as having the quality of holding together old plastered walls which may not be in good condition.

In considering linoleum wall coverings it was pointed out that almost any desired effect can be obtained in using the ten to fifteen patterns manufactured for wall applications. There are three different surfaces available in tile patterns. The colors of these have been planned definitely with the object of matching plumbing fixture colors. The linoleum materials are designed to repel water and resist heat. In addition, they are made to resist stain, to be resilient and to have permanent colors. This covering is installed in one operation. It is pasted to the wall like wall paper. However, an especially strong cement or paste is used. The attention of the Chicago merchandising group also was directed to a thin rubber tile material now available. This is mounted like decorator's canvas and is supplied in tiles or sheets.

Fig. 6—Extreme left, formica wall finish; Fig. 7—Left, stainless steel covering

Wall boards such as asbestos wainscoting are available in a variety of colors.

Some of the producers of sheet metal recently have encouraged the use of light gauge sheets with edges turned back and formed into tiles with a wet process enameled finish, in a variety of colors. This material usually requires a wallboard background which is marked off or scored into grooves. The return edges fit into the grooves when the tile is cemented to the wallboard. The joints are pointed up in a manner similar to that used with ceramic tile.

Fig. 9—This plumbing contractor sells ranges, water heaters and related items for the complete kitchen and bathroom

Fig. 8—Above is another merchandising plumbing contractor's showroom. The efforts here are along the line of selling the complete room

The method of erecting glass wall covering is similar to that used in setting marble except that a mastic adhesive is used to spot or fasten the glass in place.

Formica and micarta, both offsprings of the bakelite family are new wall covering materials. Examples of their use are shown respectively in Figs. 6 and 2. These materials are floated to the bathroom walls or subsurfaces with a waterproof adhesive. Metal strips are used over these joints. The adhesive which is used is designed so as never actually to get hard and depends on suction for its strength. This allows for the normal expansion and contraction movements of the building or background.

The illustrations marked Fig. 1, Fig. 8 and Fig. 9 indicate the type of showrooms which are used by these merchandising contractors in promoting wall coverings and related special items for kitchens and bathrooms. They are selling completed effects, not individual plumbing fixtures and their installation.

A New Feature

Letters from readers continually come in to us telling that such and such an article in a past issue was particularly helpful to them. For instance, just recently we received a letter from a heating contractor located in Washington, D. C., asking for another copy of an article published in the September 8, 1928, issue. He said, "I displayed and loaned my first copy time after time. However, the last time it was never returned. This particular article is valuable to me because it points out facts that can be expected in connection with any vapor or vacuum job. I have used the article to put three good sized jobs over by letting the owners read the convincing details of defects found in the installation described."

In answering this demand, this article introduces a series of reprinted articles from past issues of Domestic Engineering. These articles are being selected not only because they are just as timely today as when they were published but because the ideas contained in them have the value of being time proven in actual practice. Here is the first which reprints the 1928 *article referred to above:*

It Pays to Investigate

By Harry M. Brusman

THE problems incidental to installing a heating system, especially one of any size, are generally solved by a heating engineer, employed in some instances by the owner and in others by the heating contractor. How efficient the heating engineer was, or is, the owner never finds out until the coal bills come in or he gets complaints from different locations covered by the heating system.

In a majority of cases after the heating system has been installed, tested and accepted by the owner, the system is turned over to someone to operate. This individual may or may not be a skilled engineer, but on his shoulders rest the success or failure of the heating system. Many heating systems that, under proper operating conditions, would be very efficient, are condemned simply because the operator has not the proper knowledge to operate same. The best heating system to install in plants, not under the direct supervision of a skilled engineer, is one that requires the least technical knowledge. The closer this type of heating system comes to being automatic, the better.

The men at the head of the heating industry are allowing thousands of dollars per year to slip through their own, and the owners' fingers, by not checking up on the larger heating plants in their territory every couple of years. Even the best and most efficient plants will, after two years' time, if not given the proper attention, show higher operating costs than when installed.

There are a number of reasons for this, but one of the most important I have found from my own experience is from leaky radiator traps and return lines. A radiator trap, to be effective, must do the work the owner has paid good money for and has a right to expect, namely, keep the steam in the radiator and take the water and air away. There are a number of good radiator traps on the market that perform perfectly, but it is too much to expect even the best radiator trap to remain perfect at all times. From our own experience we have found that it pays in dollars and cents to test radiator traps every two years. (There are authorities on vapor and vacuum systems who maintain that two years is too long a period between inspections.)

We have at The National Cash Register Company's main plant at Dayton, Ohio, 43 acres of floor space in twenty-three buildings. These buildings are connected by bridges and tunnels. The power house is situated about the center of the plant and furnishes enough exhaust steam at one and two pounds pressure to heat the entire plant.

The condensate is pumped from the return lines by four steam-driven, wet vacuum pumps that keep from two to six inches of vacuum on the return lines at all times. In other words, the radiator traps are discharging against from 2 inches to 6 inches of vacuum. Different types and makes of radiator traps are used, all of the expanding bellows type.

Three years ago we were seriously considering installing additional vacuum pumps to take care of the increased load as new buildings were added from time to time without any increase in the vacuum pump capacity. A careful analysis of the situation gave us an entirely new slant. We concluded to test our return or vacuum

IF you are looking for profitable work, to keep your organization busy, here is a hint from a man not in the heating field, but one who has to work with heating equipment. He indicates a good field of selling endeavor—and his article might well be used in taking advantage of it.

One authority on radiator traps says, "Twenty-five years experience in a wide heating field leads me to the conclusion that in the majority of cases it would prove beneficial to the heating plant to clean and service thermostatic radiator traps. Undoubtedly there is a large field in the above work for heating contractors."

Another writes, "Your article 'It pays to Investigate' would serve a very good purpose and we recommend that it be reprinted in your magazine."

Again, "It seems to me that the line of thought which is carried out in this article is correct and that contractors as well as other firms in the heating industry could profit by placing more sales effort behind the idea of regular inspection and repairs for existing buildings using vapor and vacuum heating systems. I know of one or two firms who make a specialty of going after business of this character and in one instance, at least, the contract is made entirely on the basis of fuel savings."

Finally, "At five pound pressure differential, a 1/8-in. orifice will waste over $6.00 worth of steam per month so a man spending his entire time on checking radiator traps would easily show a profit if he found only one defective trap per day which would not be surprising in a plant having upwards of two thousand of these radiator traps."

---

lines and also the radiator traps. We did not really believe that the leakage in the return lines would be much but as it was a comparatively easy matter to fill the main lines and risers with water, we proceeded to make the test. No pressure was used other than the weight of the water.

As none of our return lines is buried underground, but run through traffic and pipe tunnels, they were easily inspected although several miles of pipe was involved. A careful inspection was made of every foot of pipe and the leaks tabulated and repaired. A final check-up showed leaks amounting to the area of a 3-in. pipe. The main vacuum or return pipe being 10-in. pipe, you can readily see the difference that amount of leakage had on our pumping capacity.

That sounds impossible with all the pipe, you might say, in plain view, but you must consider that as the lines contained a vacuum at all times, there was no outward indication of leakage, no water on the floor or wall. The noise made by the leaks was overcome by the noise made by the traffic through the different tunnels or by the running machinery in the buildings. We were very much surprised and gratified by the results.

The problem now remaining was to get a satisfactory test on each of the 2,669 radiator return traps, some of which were more than ten years old. To take out each individual trap body was a job of such magnitude that it was not considered. We did some experimental work trying to test the traps while on the radiator with the steam on and while we might have finally succeeded, we saw that it would be an endless job and stopped working along that line.

We finally concluded that as only the expanding units were likely to be defective, to test them would be all that was necessary. To test these we installed a trough about 10 ft. long with a steam pipe running about two feet above the bottom of the trough. Tees were spaced about ten inches apart with different sized openings, into these we screwed tail pieces from the different style return valves with the body connected. Into the supply end of the steam pipe we connected a cold water pipe so that we could have at will either steam at two pounds or cold water.

The expanding units with tops were taken out of the trap bodies on the radiators and after being thoroughly cleaned in benzine, were screwed into the body of the traps on the testing header. Then alternately steam and water was turned on, giving the expanding unit a thorough test both on expanding and closing. The testing force worked in twos and each gang would bring in from 12 to 24 expanding units and tops to be tested each time. After testing and replacing the defective units, they would replace them in the trap bodies on the radiators and another collection made. In this way the factory was covered thoroughly and very few traps were missed in the check-up.

No effort was made to return the expanding unit into the trap body it came from, and outside of examining and cleaning the seats, nothing was done to the trap bodies.

124 traps were replaced with new.
105 expanding units installed.
Cost of replacing defective parts including new traps $1,349.00
Cost of labor 667.00
239, or 9 per cent of the traps tested were found defective.

Two years later the same tests were made at a labor cost of $509.00, with a material cost of about one-half. Replacement of parts was made without cost. Before the tests were made it was necessary to run the four vacuum pumps at high speed with a cooling water spray connected into the suction line in order to hold three or four inches of vacuum. Now we can, except in extremely cold weather, hold from two to six inches of vacuum on the system with two pumps, without cold water spray.

In addition to this we were able to heat the plant with from 1 to 2-lb. pressure exhaust steam while before the tests and repairs were made it was necessary in some of the buildings to carry from 5-lb. to 10-lb. pressure live steam to overcome the back pressure in the return lines.

I believe that similar conditions exist in every vacuum heating system in the country more than three years old. There is a big field in every locality for the heating contractor or engineer with courage enough to go after this business on a percentage of savings basis.

Fig. 1—The above is a view of the Sage Hydraulic Laboratory of New York University

The Reasons for Vents

By WALTER S. L. CLEVERDON

Associate Professor of Sanitary Engineering
New York University

WHEN the writer attended a convention of the New York State Association of Master Plumbers at Schenectady, New York, there was, in the course of conversation, a great deal said about siphoning traps. Some members maintained that a complete vacuum had to be produced in the soil or drainage line before a trap connected to it would siphon; others were very positive that a reduction in air pressure in the soil or drainage lines would siphon the trap. The only question in the minds of these gentlemen was: How much must this reduction in atmospheric pressure be to siphon the trap? It was suggested at that time that we take the subject up as part of our laboratory work in the plumbing course.

A plumbing system should be so designed as to bring potable water into a building and remove sewage, whether it be in the solid, liquid or gaseous form, and prevent vermin entering the rooms via the soil lines. Traps and vents acting simultaneously have to do for the most part with sewage in the gaseous form and the prevention of the entrance of vermin into the rooms.

The trap is designed to form a water seal, thus preventing foul air, gas or vermin from coming up the drain or soil pipes into the rooms where the fixtures are located. It should accomplish this, offering the least possible frictional resistance to water or sewage passing through it. The trap seal should be sufficiently strong and *well vented* to prevent siphoning due to a reduction in the atmospheric pressure in the stack, self-siphoning due to the momentum of water in the branch reducing the atmospheric pressure just below the trap, and back pressure forcing water back into the fixture.

The trap should be self-cleansing, which, of course, means it should permit a swift current to pass through it. Otherwise, deposits will form due to sedimentation and adherence to the metal.

Traps should be set true with respect to their water seal and should have accessible cleanouts.

The "Hoover Code" recommends a minimum seal of 2 in. and a maximum of 4 in.

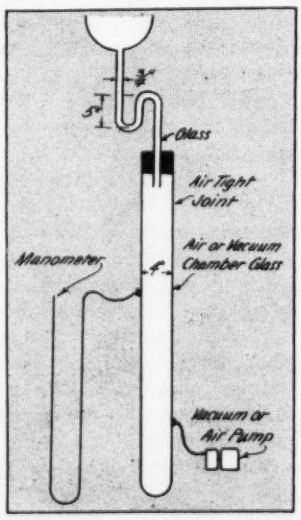


Fig. 2—Arrangement of apparatus for determining the necessary reduction of atmospheric pressure to siphon a 5-in. trap

This article presents one more collection of evidence proving the necessity of traps and vents. "It is up to the minute with the views of all of the leaders in the plumbing industry" writes J. L. Murphy

The trap seal may be broken by siphoning, self-siphoning, back pressure and by evaporation. By self-siphoning is meant the water or sewage having sufficient weight and attaining sufficient velocity as it passes out, to so reduce the atmospheric pressure in the branch on the down-stream side of the trap that the atmospheric pressure on the up-stream side of the trap will force the contents of the trap into the branch from which it will flow by gravity to the stack.

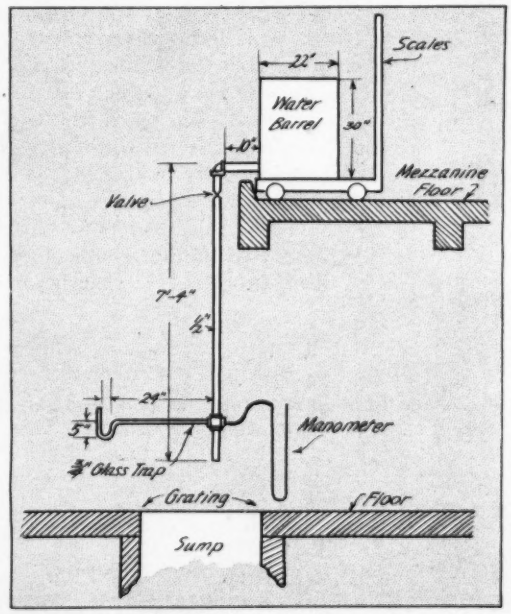


Fig. 3—This drawing shows apparatus used with no vents on trap or drain line

By siphoning is meant the reduction of atmospheric pressure in the stack by the high velocities in it, so that the atmospheric pressure on the up-stream side of the trap will force the water out.

Evaporation of the water in a trap seldom empties it for the reason that fixtures are used often and do not permit sufficient time to elapse for evaporation to dry out the trap except when the house is closed for long periods. Flat bottom fixtures drain slowly at the finish and therefore the trap is not siphoned. Oval bottomed fixtures drain quickly and will self-siphon if not vented. This is especially true where there is a long horizontal arm. Self-siphonage does not readily take place where the horizontal arm does not exceed 2 ft.

Where a 90 degree bend is in a horizontal arm, self-siphonage is reduced due to the consequent reduction in velocity. The chances of siphonage and self-siphonage are reduced where the strength of the trap seal is increased: i. e., using a trap with deeper seal.

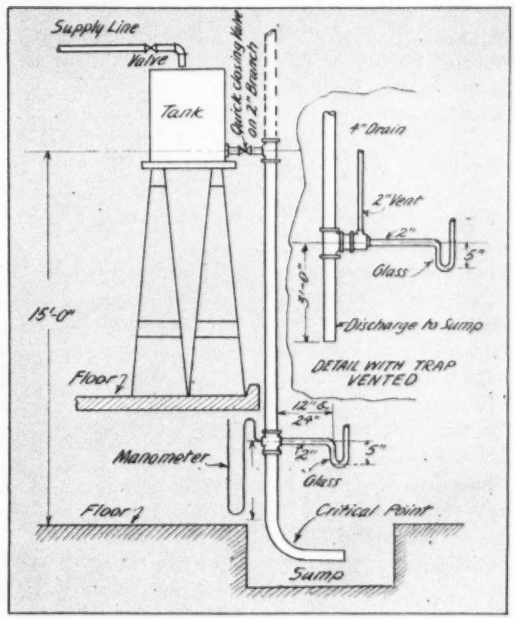


Fig. 4—This apparatus was used for experimenting with glass traps with and without venting

Fouling the branch increases chances of self-siphonage.

In case the house is to be closed for a month or more, the trap should be drained of water and should be filled with a non-volatile oil which will keep the seal.

Vents are designed to prevent high or low air pressures in soil or drain lines which will cause traps to siphon or to back up into fixtures allowing foul air to enter the rooms containing the fixtures.

In order to carry out the suggestion made by the New York State Association of Master Plumbers three sets of experiments were made. The first set was to determine what the necessary reduction in atmospheric pressure is to siphon a trap and its relation to the trap seal. The second and third sets were to determine under what conditions of venting, or the elimination of venting, this reduction in pressure in the soil or drainage lines would take place.

The apparatus for the first set consisted of a glass trap connected to an air or vacuum chamber. See Fig. 2. At the side of the chamber a vacuum gauge and a vacuum pump were connected. The vacuum gauge was read. After filling the 5-in. seal the vacuum pump was operated slowly and the vacuum gauge was read again

just as the trap siphoned. The difference in readings on the gauge was so slight that it could hardly be detected. A manometer was then used.

Several runs were then made. The readings on the manometer were approximately 3/8 of an inch of mercury (quick silver), which is somewhat in excess of the pressure exerted by a 6-in. column of water. This was the depth of the seal of the trap.

3/8 of an inch of mercury = 2.94 ounces
5 inches of water = 2.89 ounces

Therefore, it appeared that it was only necessary to reduce the atmospheric pressure in the chamber from about 14.7 lb. to 14.52 lb. to siphon the trap and that the strength of the seal was determined by the depth of the water in the trap.

The apparatus for the second set of experiments is shown in Fig. 3, and the results are given in Table I. In this figure no venting is shown. The trap branch enters the drain pipe at a cross fitting to which a manometer is also connected. A valve at the outlet of the tank controls the flow.

When the valve was completely opened the traps with the 12-in. and 24-in. branches siphoned completely in from 3 to 6 seconds with a manometer reading of 3/8 of an inch of mercury. This 3/8 of an inch of mercury corresponds to a pressure of 2.94 ounces, while the seal of the trap 5 in. corresponds to a pressure of 2.89 ounces.

It was therefore, only necessary to reduce the atmospheric pressure in the soil line from 14.7 pounds to 14.52 pounds to permit the atmospheric pressure outside the line to push the water over into the drain pipe.

The trap with the 12-in. branch to the drain pipe siphoned slightly quicker than the trap with the 24-in. branch. In the latter case, it seemed to take a little more time to overcome the inertia. This, of course, is siphonage. Self-siphonage would take place sooner with the longer or 24-in. branch from the trap to the stack.

These runs also indicated that the depth of the seal of the trap represented its strength against siphoning.

The apparatus for the third set of experiments is shown in Fig. 3, with a detailed sketch of the trap vent. Two-inch glass traps were used. In the first two sets 3/4-in. traps were used while in the last set 2-in. traps were used. The depth of seals on all of these traps were as near the same (5 inches) as it was possible to make them.

This shows that it is the depth of seal which represents the strength of the trap and not its diameter.

The reason for this is: That the surface of the water at the up-stream and down-stream sides of the trap is exposed to the atmospheric pressure which is of a uniform intensity of about 14.7 lbs. per sq. in. before the flow takes place. When water begins to flow down the soil or drain pipe, it tends to reduce the pressure in the soil or drain line below 14.7 lbs. per sq. in. This reduced pressure acts on the down-stream side of the trap seal with a reduced intensity. The resultant force acting is simply the difference in intensity of the atmospheric pressure at the up-stream side and that of the reduced intensity of the down-stream side. Hence the trap siphons.

The depth of seal is the actual resisting force and produces its maximum effect when the trap is about one-half empty. That is to say, when the down-stream side of the trap and the horizontal portion is full of water, and the up-stream side is empty. This column of water which in our case is 5 in., resists the atmospheric pressure as it tends to force the water up and out. While the greater the depth of seal the stronger it is, the greater is the tendency to clog the trap. This condition also applies to the non-siphoning trap which relies on reducing velocities in order to prevent siphonic action. For this reason traps with seals between 2 in. and 4 in. are recommended by the "Hoover Code."

The pressure coming on trap seals are usually slight but sudden and of varying intensity so it is difficult to figure the required strength of seal; but if properly vented by passing the lines through the roof and venting each individual trap, there is little danger of siphoning the trap.

While it is admitted that no water-born diseases can be spread by the foul air or gas coming from a sewer or soil line, it is a fact that this gas or foul air has a bad effect on persons inhaling it. While the liquid in the sewer, which contains the dangerous bacteria, cannot come in contact with a person's mouth, it is quite possible for vermin, varying in size from an ordinary water bug to a rat, to get into the sewer, and where the trap is siphoned, come up covered with the disease bacteria and walk over food, thus contaminating it and giving a fine opportunity for the person eating this food to become infected with any of the water-born diseases, the most deadly of which is typhoid. So much for the bacterial end of it.

Table I

Showing Results Obtained with Apparatus as shown in Fig. 2.—3/4-in. Traps

Run	Position of Gate	Manometer Readings Inches of Mercury	Branch to Trap Inches	Remarks
1	Wide Open	3/8	24	Trap completely siphoned
2	Half Open	1/8	24	Trap one-half empty at end of run. The water in the trap had a continuous up and down movement during the flow, which reduced the seal gradually.
3	Wide Open	3/8	24	Stopper was placed in inlet of trap. Water in trap perfectly still until stopper was removed then it siphoned immediately.
4	Wide Open	3/8	24	Completely siphoned in 9 seconds.
5	Wide Open	3/8	12	Seal broken in 3 seconds.
6	Gradually opened in 42 seconds	1/8 to 1/4	12	Seal broken in 42 seconds, the loss of water was slow at first but rapid at end
7	Opened in 6 seconds	3/8	12	Seal broken in 6 seconds
8	Gradually opened	1/8 to 1/4	12	Valve completely opened before trap completely siphoned

(To be continued)

How to Figure Overhead Expense

By R. H. Pflug-Felder

Codes of fair competition are based in part, on the figuring of overhead expense. Too much importance cannot be attached to this subject

HERE IS a chart, see Fig. 1 on the next page, which I made up as chairman of the educational committee of the Pennsylvania State Association of Master Plumbers and used for the first time at the state convention at York. At that time, when I displayed the chart and talked about it, there appeared to be a certain apathy, and this does seem to be the case when you address a gathering of plumbers on any subject with which they are not thoroughly familiar.

To my immense satisfaction later, this chart and the talk I gave, made an impression far deeper than I ever thought possible. The echoes are still coming back after these many years, and many men from many parts of the State have told me that my talk at that time and the chart awakened them and that their business from that date on showed different results. Many have told me that their real success in business life started through the shock they received when the truth shown on this chart dawned on them.

When talking on a subject like this, we must remember that the rank and file in the plumbing business do a very limited volume of business. The men whose business runs a hundred thousand dollars a year, or over, have methods of their own as a rule; have real competent bookkeepers employed and they are fairly well versed in the problem of operating expense, chiefly because that item is so large that it cannot be overlooked, and yet even among the larger operators we find man after man who, while he knows his overhead, applies it

in a way of percentage, but does not apply percentage in the right way. Percentages should be thoroughly understood because if improperly understood and improperly applied they are a double barreled weapon and kick back. Take a hundred dollars. 50 per cent off gives you $50. Then put 50 per cent on the $50 and you have only $75. It takes 100 per cent added on to get back what 50 per cent has taken off.

As said before, the larger operator, with some exception, knows how to apply overhead; but the man we must reach is the man doing a limited amount of business who, nevertheless, is a dangerous competitor as frequently the small man will reach out and take a job running into many thousands of dollars and not knowing what it costs him to do business and not knowing how to figure it, he takes the job at an actual loss to himself and causes a loss to his competitor from whom he has taken the job.

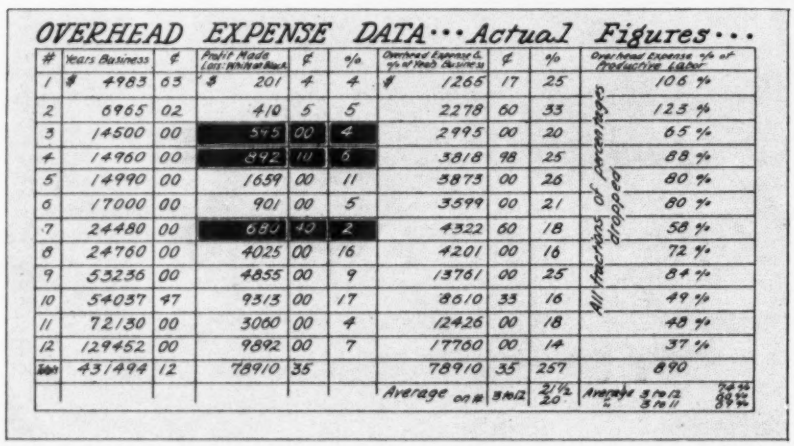
Why this should be so, I cannot see. I suppose it is due to so many men graduating from apprentices to journeyman—from journeyman to master plumbers without having any business training whatever. They adopt the grindstone as their birthstone and cannot get away from it. They have worked so hard and so long that they simply can not read their trade papers or attend conventions. They frankly say: "We don't make enough money to be able to attend conventions"—and, frequently they offer excuses for not attending their association meetings regularly.

When I investigated and had before me the data of some one hundred shops in this region, and selected these 12 examples before you, I had an even stiffer fight on my hands than what we have to do today. At that time it was quite common to figure cost of material and labor, plus 10 per cent. When I say quite common, I mean by men who had no business training—no business sense and were very bad competitors, and I am glad to say that we are far away from that, 10 per cent added to material and labor, today.

REASON FOR OVERHEAD EXPENSE INCREASE

One of the reasons is that overhead expense has so tremendously increased since those days, that even a small grain of common sense forces the man to realize that overhead expense is part of first cost.

Many of us in the past have realized what we should add to material and labor to cover overhead expense, and facing ridiculous figures in competition makes us weaken and in consequence we add less and less percentage to the cost of material and labor—and, eventually we have a year where we find while we had reached a nice volume of business too blamed little or nothing is left at the end of the year—and, after all, it does not make a particle of difference what the volume of business done amounts to, the one thing that really makes a difference is what is left at the end of the year.



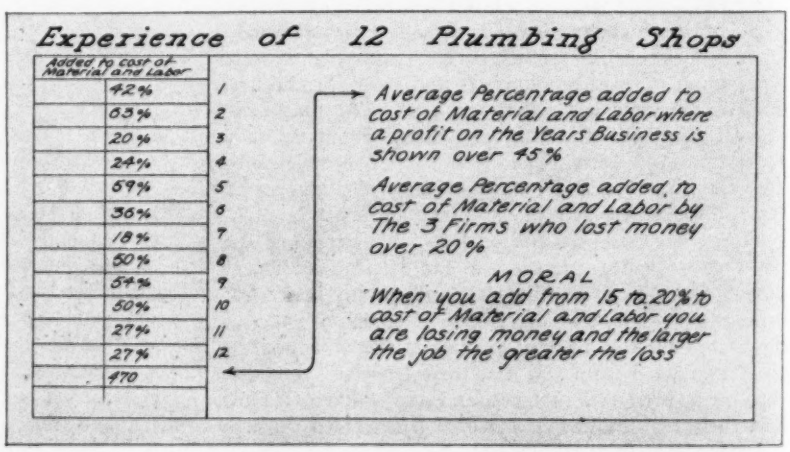
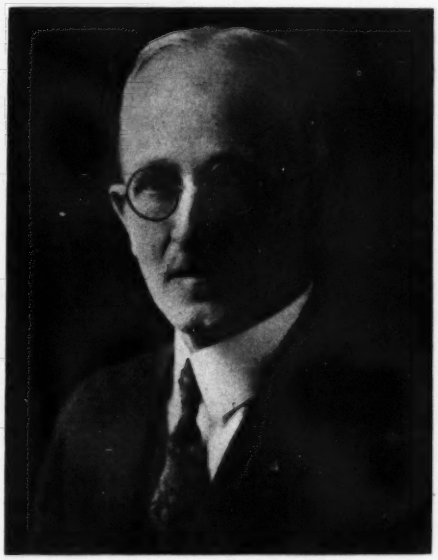

Experience of 12 Plumbing Shops
Added to cost of Material and Labor
42%
63%
20%
24%
59%
36%
18%
50%
54%
50%
27%
27%
470
Average Percentage added to cost of Material and Labor where a profit on the Years Business is shown over 45%
Average Percentage added to cost of Material and Labor by The 3 Firms who lost money over 20%
MORAL
When you add from 15 to 20% to cost of Material and Labor you are losing money and the larger the job the greater the loss

Fig. 1—These two charts, which in effect are one chart divided in half, show the experience of twelve plumbing shops. Actual figures on overhead expense data are given. The white figures on black indicate loss

Driving home the idea of knowing what it costs you to run your business and what you must add steadily and conscientiously to your first cost, is like trying to convert a man to Christianity. It cannot be done from without, it must come from within, and only through a rude shock will the average master plumber come to the realization, of what he must add persistently and constantly to the cost of material and labor in order to attain good results at the end of the year.

This chart, these actual reports of twelve shops in your own city, will furnish that rude shock, if you will look at it long enough—let your brain absorb it and let it sink in. The figures shown here are taken from a period when prices were low, but they hold good today. About double the figures and it will almost answer for today, excepting that I believe operating costs have a way of multiplying even out of proportion to advances in the annual sales. However, I believe you will find that the percentages shown still teach their sharp lesson. All we have to find out is what it costs us to do business in dollars and cents. Divide that sum by the total business done last year and get the percentage fast in our mind. Then we should know what percentage we want to add to cost of material and labor to make our overhead and 5, 8, 10 or 20 per cent actual profit, and I know well that few of us have the nerve to figure in competition and add more than just enough to get back our overhead and 10 per cent profit.



R. H. Pflug-Felder, the author of this article, just recently was honored by the members of the Master Plumbers' Association of Philadelphia, as a result of his having passed his twentieth anniversary as secretary of the association. Obviously, this article reflects his years of associations with plumbing contractors and their problems

After we have this percentage well in mind, let us not forget that this percentage applies to the selling price, and it will not do to add this same percentage to the cost of material and labor. For instance, if you find that your overhead is 20 per cent of last year's business and you want to make a profit of 10 per cent, adding 30 per cent to material and labor would only show you 3 per cent profit on the selling price. To gain 10 per cent it would mean adding 44 per cent to cost, if your overhead is 20 per cent. Then your figure would cover 70 per cent for cost of material and labor; 20 per cent for overhead, and 10 per cent for profit. Prove it to yourself: Labor and material $70.00. Add 44 per cent of $70, which is $30.80. This equals $100.80. This gives you $70.00 or 70 per cent for first cost, material and labor; $20.00 or 20 per cent for overhead, and $10.80 or 10 per cent for profit.

The experience of shops No. 7 and No. 8 should furnish that rude shock which we need. Both shops did the same volume, nearly $25,000—equal to about $50,000 volume today. Operating expenses were about the same —15 per cent or 18 per cent. Boss No. 7 thought that by adding on an average 18 per cent to cost he was adding all that the traffic could bear, and after slaving for the entire year, found that he not only had not made any money, but that he was actually $680 poorer than at the beginning of the year.

Boss No. 8 had the wisdom of years and knew that to buy shoes for the kids and a new tire for the car, adding 18 per cent simply would not do. So he aimed, on every bit of work, to add 50 per cent to cost of labor and material and the result was $4,000 in bank at the end of the year—a profit of 16 per cent.

Boss No. 9 added 54 per cent on an average to cost of labor and material, but as his overhead was 25 per cent, he could only show 9 per cent profit on the year's business.

Again failling back on averages we find that the nine shops that wound up the year with more or less of a profit on the average added 45 per cent to cost of materials and labor, while the average added by the three men who lost money was about 20 per cent.

So many men think that if they can only procure a large volume of business money is sure to be made. How foolish! Compare shops No. 7 and No. 8. Nearly the same amount of business. Nearly the same overhead expense. One showing a handsome profit, the other a severe loss. This indicates clearly that volume alone does not help to make money, even if you do pare down your operating cost. No. 7 on an average added 18 per cent and No. 8 added nearly 50 per cent to cost of material and labor and that, and only that, is the reason why No. 8 shop succeeded so well.

Shop No. 8 did less than one-half of the volume of business of shop No. 9 and made almost as much money, proving clearly that success lies not in the volume of business done, but in the profit realized by the careful management of your business. We, as well as every man in business, figure out how much money we could make if we could only get all the business that our shops, without increasing fixed charges, could take care of. The minute our shops are reaching their maximum capacity the pressure becomes greater and as this volume of business continues we hope for a let-up, and why? Simply because no machine or human body can continuously operate under it maximum efficiency.

(To be concluded)

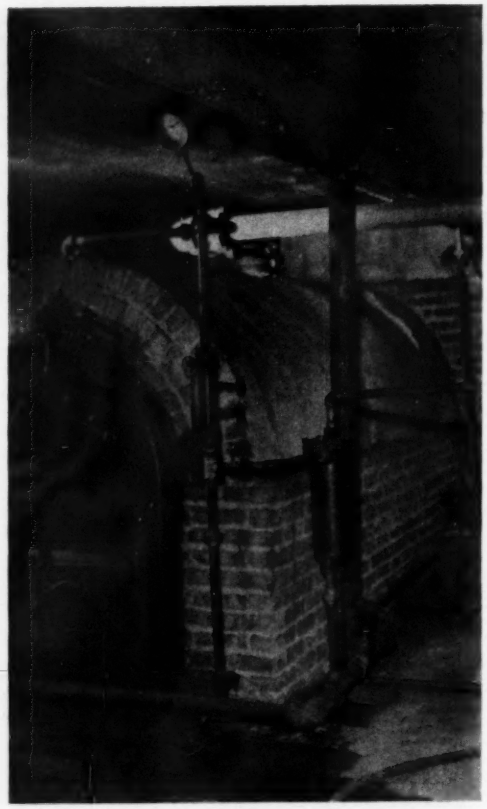


Fig. 1—A view of the piping installation, with its many errors, as it was found before any corrections were made. This article points out how it is impossible to circulate water through the indirect heater

A Collection of Errors

By Wm. W. Stevens

Here is an indirect heater installation on which it seems every mistake possible was made in the piping connections

INDIRECT water heating equipment, depending upon gravity circulation, is subject to the same physical laws which either cause or prevent circulation in other types of gravity water heating systems. In other words, it is just as necessary to observe good practice in making indirect water heating installations as it is when designing and installing other types of systems. For instance, hot water is lighter than an equal volume of cold water. The result is that when hot water is generated in the low point of a piping system, and when there is colder water in the upper part of the same system, gravity pulls down the heavier cold water and this, in turn, pushes the heated water to the top. In the case of a gravity circulation indirect heater, good practice requires that the heater be placed at a level lower than the storage tank to which it is connected. This is so the hot water which is generated in the heater will start at a point lower than the cold water in the storage tank. Accordingly, the cold tank water falls down the return pipe to the indirect heater and the heated water in the indirect heater is pushed up to the top of the storage tank. This goes on as long as there is an unbalanced condition in the system resulting from heavy water being at a higher level than lighter water.

For the best results, the top boiler opening of the indirect heater should be roughly 3 in. below the normal water line of the heating boiler. Likewise, the storage tank should be horizontal and as high as possible. This differential in heights is the only motive force for bringing about gravity circulation in indirect heater installations. Therefore, the importance of this differential readily is seen.

As for the circulation of the boiler water through a gravity circulation indirect heater, this occurs for the same reason outlined in the case of the circulation to the tank. However, in this case, the operation is somewhat reversed. Here instead of water being heated at the bottom of the system to produce an unbalanced con-

dition, the hot water is cooled at the top of the system. Naturally, it falls, because it is heavier than the water in the boiler leg at the same level. This is one of the reasons for locating the indirect heater as close to the boiler water line as practicable, in steam and vapor heating systems. It permits a maximum drop for the cold water and, obviously, a maximum circulating force. The other reason is that when steam is being generated in a boiler, the temperature of the water at the surface of the water is 212 deg. Fahr. but the temperature of the water in the boiler at lower levels is lower than 212 deg. Fahr., the lowest temperature being at the lowest level.

Another equally important point is that if water is to circulate normally, by gravity, it must have a complete circuit in which to travel. If the circuit is broken by one or more air pockets it is illogical to expect the water to flow. In addition, if the water circuit is broken on the boiler side by having the top piping connected above the water line, obviously, circulation cannot take place.

With these general features in mind, it is interesting to follow through the connections for an indirect heater just recently encountered in a garage located in Chicago, the owner of which complained of not getting hot water. Practically nothing, in the way of piping connections was found correct. Almost every error possible was made on this job. It is a perfect illustration of what should not be done when making an installation of this kind. There was not only one reason for the owner not getting hot water, there were many.

The accompanying photograph marked Fig. 1, and the drawing, Fig. 2, show the inoperative system as it was found. In the first place, no heat from the boiler reached the indirect heater. The reason for this can be seen readily when it is noted that the top connection to the indirect heater is fitted into the water column. The return connection from the heater is fitted into the return connection for the water column. It is impossible to understand how anyone could expect boiler water to circulate through the indirect heater when it is considered that the top of the water column is connected to the top of the steam chamber in the boiler. The top connection for the indirect heater should have been made directly into the boiler, just below the boiler water line.

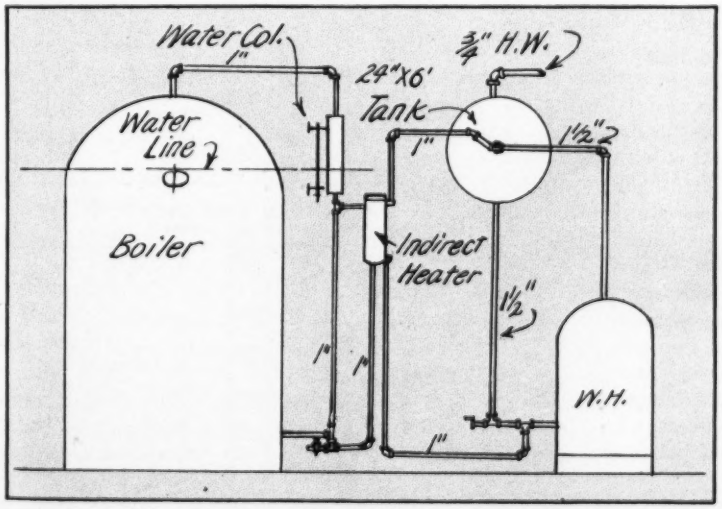


Fig. 2—Here is a diagram of the piping connections as they should not have been made. Everything about it works to defeat the purpose of the equipment

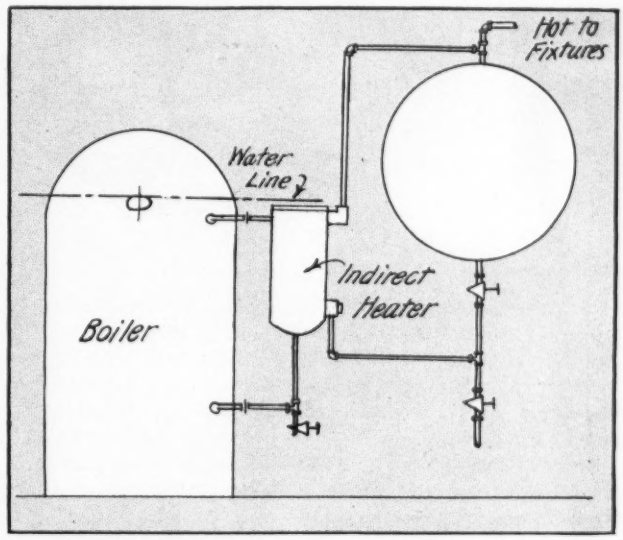


Fig. 3—These are the connections which were recommended for the installation in correcting the piping shown in Fig. 2

Another feature shown by Fig. 1, is that the top of the indirect heater is at a point considerably below the normal water line. This means that the heater, even if circulation were possible, is not high enough to be in the hottest boiler water. The drawing marked Fig. 3 indicates the corrections which should be made in the installation so as to cause it to function properly. Note it is recommended in this case that the top connection for the indirect heater be tapped into the front of the boiler, just below the water line. This provides an individual connection for the heater. Also, a blow-off valve is specified for the indirect heater which permits flushing it out periodically. With the old arrangement, the course of the water in flushing, was merely through the short connection to the boiler. If it is desired to make the arrangement in Fig. 3 even more positive in directing the flow of water through the indirect heater, in flushing it out, a valve could be placed in the horizontal return connection to the boiler. In this case, the water would be drawn off at the top of the boiler, it would be diverted

(Continued on Page 44)

QUESTIONS AND ANSWERS!

1—

1. *Reader says that people in his locality are burning wood and are having difficulty with condensation in their chimneys. Changes in the chimney are suggested.*

2. *Difficulty is encountered in a water heating installation. Cause is traced to localized circulation. Solution is in the separation of the two heating units.*

To the Editor:

A great many of our people are burning wood this winter in stoves and boilers, some using very little of any other fuel. Some are having trouble with creosote forming in the chimney, at times enough to soak through chimney walls and run down in pools. What is the cause and what can be done to remedy the trouble. Some who are having the most trouble are burning practically all dry wood. This is causing considerable annoyance and if you can suggest any remedy we will greatly appreciate it as we are receiving quite a number of inquiries for help along this line.

Iowa. S. B.

To the Editor:

The fact that the wood which is burned is dry has little to do with the condition you have encountered. When wood is burned, water vapor is one of the products of combustion. When this comes in contact with cold surfaces, the water vapor is condensed to form water. The cause of the condensation is very easily explained and lies in the fact that wood is burned to give an intermittent heat. On checking back, we are sure you will find that the wood fire is allowed to die down until the owner feels the lack of heat. Then a considerable quantity of wood is thrown on the fire and a roaring blaze results for a short time. These alternate periods of excessive heat and cooling of the heating equipment and chimney cause the difficulty. It is likely that at no time does the chimney become thoroughly heated with the result that during the low periods of the fire, it becomes thoroughly chilled. If the chimney is an outside wall then the condition is still more serious.

One solution consists of inserting in the chimney a metal liner which is not acted upon by the corrosive acids formed in the chimney. This liner has two purposes. First, it prevents the moisture from penetrating the bricks and mortar composing the chimney. If the conditions are excessive, the water may be directed into a pail or near-by floor drain at the base of the chimney. A second feature of the metal liner is that the space between it and the chimney can be filled with an insulating material and thus serve to maintain the temperature of the inside of the chimney at a higher degree.

The top of the liner is made so as to return over the cap of the chimney. This is for the purpose of preventing currents of air passing between the liner and the chimney when insulation is not poured in this space.

One of our readers encountered a difficulty similar to this a short time ago and we suggested this solution to him. He used it and later reported that it was very satisfactory.

2—

To the Editor:

I am attaching a sketch of a range boiler and side arm gas water heater, piped in connection with a coil in a fire pot.

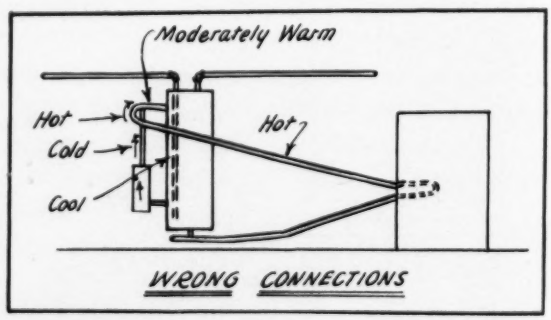


Fig. 1

The trouble is that insufficient quantities of hot water are delivered with the coil in fire pot. Even with a coke fire piled up around the side of furnace so as to cover the coil, only ⅓ of the water in the range boiler is heated and even this does not become scalding hot.

Even in winter weather with the fire going it is necessary to use the gas side arm heater for an hour to heat sufficient water for a 5 ft. tub bath.

Will you kindly check over the connections as shown on the attached sketch and write me advising if the hook-up is correct or what changes you would recommend?

RUST PROOF

COPPER AND BRONZE THROUGHOUT

PENBERTHY AUTOMATIC ELECTRIC SUMP PUMPS

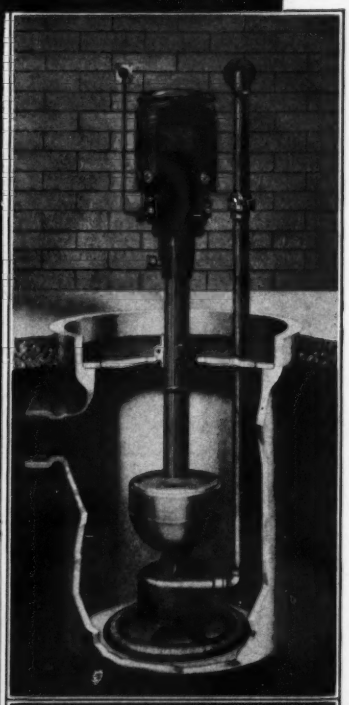
MODEL K
(No. 1K shown)
Retail Price
$65.00

¼ h.p. repulsion induction motor.

3600 g.p.h. maximum capacity.

All standard electrical specifications.

Made in 5 sizes for sump depths to 8½ ft.



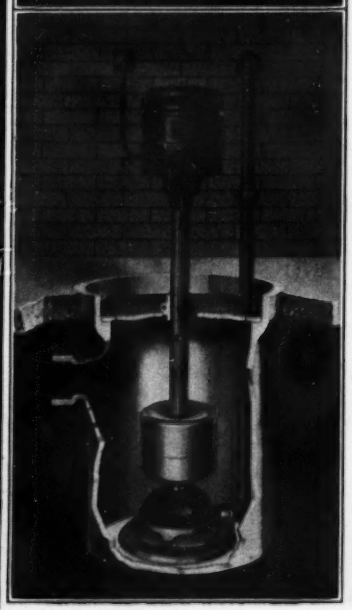
MODEL 33
Retail Price
$39.50

⅓ h.p. motor.

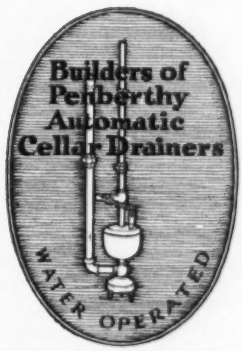
1400 g.p.h. maximum capacity.

105-120 volts, 60 cycles; 220 volts, 60 cycles optional.

Made in one size only for sump depth from 10" to 24".



PENBERTHY PRODUCTS



THE plumbing contractor need not be told the many advantages of using copper and bronze in the construction of equipment for the removal of seepage water from basements, elevator sumps, scale pits, piping tunnels, etc.

Penberthy Automatic Electric Sump Pumps and Automatic (water operated) Cellar Drainers are built of copper and bronze throughout . . they cannot rust.

The design and workmanship of Penberthy Pumps are as outstanding as the quality of the materials used in them.. Consequently, these pumps are trouble-proof as well as rust-proof.

There is a type and size of Penberthy Pump for every purpose. Sump covers for both electric and water operated units can now be supplied at slightly additional cost. Penberthy Pumps are stocked by leading jobbers everywhere.

PENBERTHY INJECTOR COMPANY

Established in 1886 — DETROIT — Canadian Plant Windsor, Ont.

PENBERTHY PUMPS REMOVE SEEPAGE WATER

A SMASHING

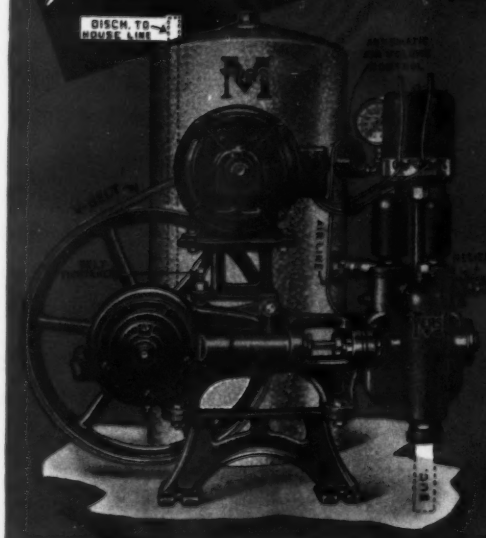
On the World's Finest and Most WATER

LIST ~~$71~~ $50.50

COMPLETE — READY FOR INSTALLATION, NO BASE OR OTHER EXTRAS TO BUY!

LIST ~~$94~~ $67

LIST ~~$84~~ $60



PRICE CUT ▲▲▲
Complete Line of Shallow Well SYSTEMS!

HERE'S a challenge to every water system prospect on your list! Cash in now on these new "sales-compelling" prices.

These are not new *cheap untried* units quickly built to meet a market, but the same regularly catalogued "precision-built" MYERS line!

The *same* FINE QUALITY
The *same* POPULAR SIZES
The *same* CAPACITIES
The *same* proved PERFORMANCE

If you have not received this important announcement by mail, write or wire us at once for dealer proposition that means *immediate* business and profits. DON'T DELAY!

MYERS FEATURES

- Precision Built Automatically Controlled Self-Oiling Pumps
- Perfect and Continuous Lubrication
- Double Bearing Center Eccentric Drive
- Extra Large Valves
- Unrestricted Waterways
- Electric Welded Vertical Tanks Galvanized after Welding
- Repulsion-Induction High Efficiency Motors
- Automatic Control Switches with Overload Protection
- Air Volume Control Pioneered by Myers
- Dependable V-Belt Drive
- *And Many Other Equally Important Features*

THE F. E. MYERS & BRO. CO.
ASHLAND, OHIO
"Pump Builders Since 1870"

MYERS Self-Oiling Water Systems

The range boiler has a capacity of 40 gallons.

The heater is of the double copper coil type.

The coil in the fire pot is a one-inch by 24-in. hairpin coil.

All piping is ¾ in. the fire pot is 2 ft. 6 in. in diameter.

The piping between the range boiler and the furnace coil is about 7 ft. in length.

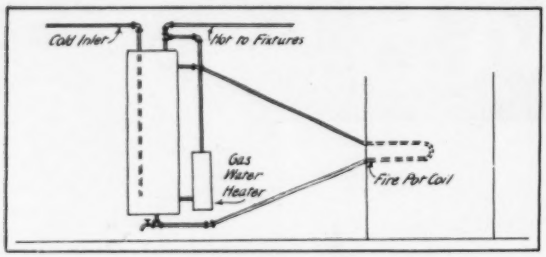


Fig. 2

This is a deep fire pot and as the coil enters at the bottom of the fire door level, ordinarily the hairpin part of coil does not have coke piled up over it but the bottom of the coil is about 2 in. above the fire.

Pennsylvania. R. H. R.

TO THE READER:

Our sketch marked Fig. 1 will indicate what undoubtedly happens in the system. We believe everything points to a case of localized circulation. That is, when there is a fire and when water is heated in the fire pot coil, this circulates just enough to start circulation through the gas heater and the range boiler as indicated by the arrows in Fig. 1. If this is the case, the points indicated by arrows will be at the temperatures marked in Fig. 1. The solution to the problem is to separate the two systems so as to eliminate this localized circulation. This is indicated in Fig. 2.

With connections similar to these, there is no question but what the system will operate satisfactorily using either the fire pot coil or the side arm heater. If your water is hard, it is very likely that the coil in the fire pot is choked with lime scale. In this case either the scale should be removed or the coil replaced before the system is placed in operation again.

Questions For READERS

The following question was asked in the December issue, and the following answer is by a reader:

In a hot water heating system, why should the return main entering the boiler be the same size as the supply main before the first branch is taken off?

There is a rule in piping or handling water, otherwise known as hydraulics, to the effect that the quantity of water discharged through a pipe in a unit length of time is equal to the cross sectional area multiplied by the velocity of the flow. In other words, if a pipe has a cross sectional area of ½ sq. ft. and if the velocity of flow is 6 ft. per minute, then the quantity of water flowing past a given point each minute is equal to ½ times 6 or 3 cu. ft. Now, if the same quantity of water is to flow past this point, namely 3 cu. ft. per minute, and if the cross sectional area of the pipe is reduced one-half, then the velocity must change and in this case it would be doubled or 12 ft. per minute.

In a hot water system, for every gallon of water that flows out of the supply main at the boiler, the same quantity must flow into the boiler through the return main. Keeping in mind the above relation, it can be understood that there would not be any point in decreasing the size of the return at the boiler which would mean a consequent increase in the velocity of flow at that point.

How Would You Answer This Question?

Why is the air vent on a steam radiator located at a distance below the top while on a hot water radiator, it is located at the top?

Answers based upon your experience, suitable, will be paid for and published in the April issue.

Errors—

(Continued from Page 39)

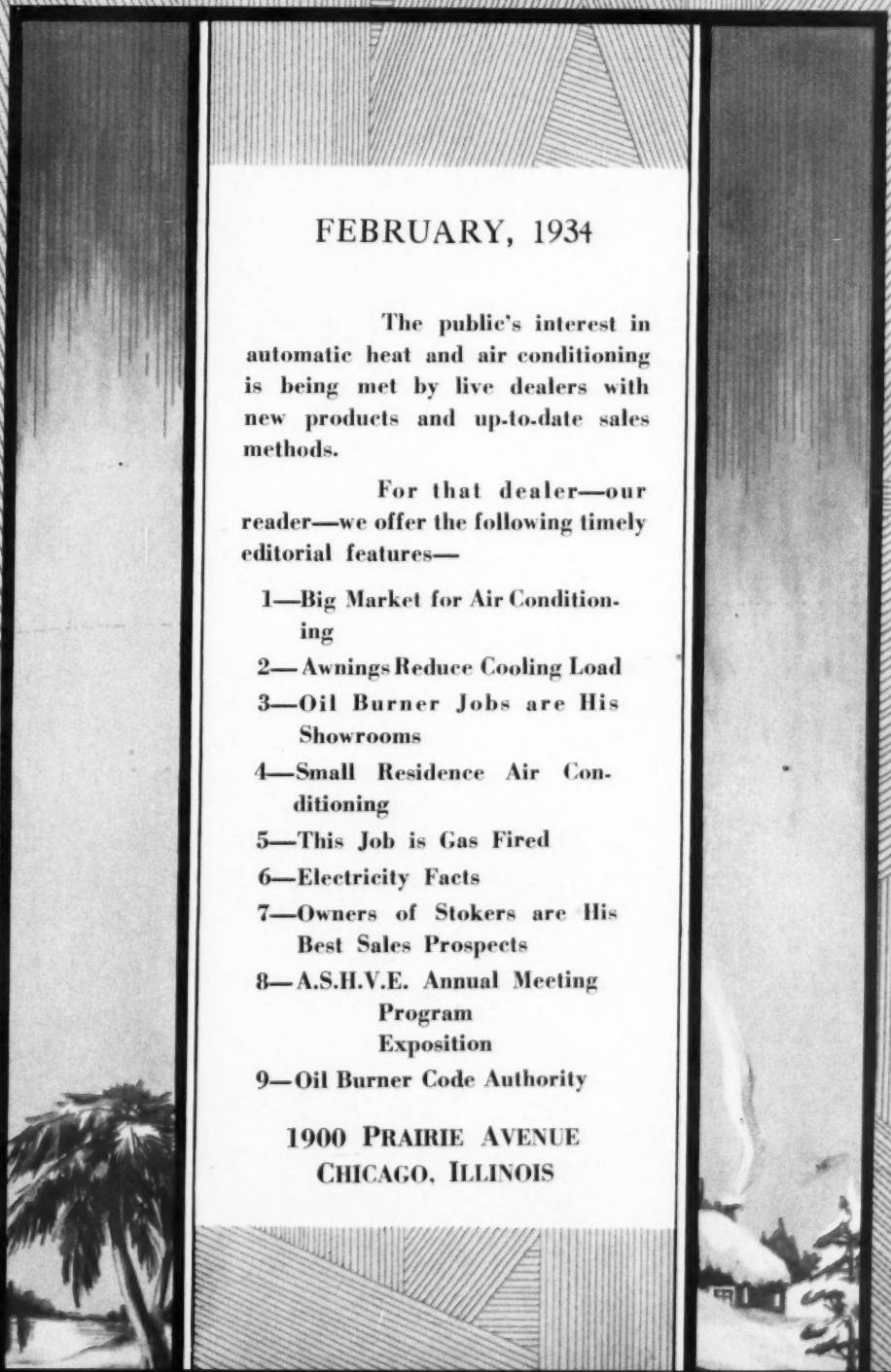
through the indirect heater and finally, it would be discharged through the lower valve.

As for the connections between the indirect heater and the storage tank, Fig. 2 shows how these alone defeated the purpose of the system. The line from the flow connection of the indirect heater to the storage tank dropped down to enter the tank, thus forming a first class air pocket. Ordinary tap water contains a large amount of air. When this water is heated, the air is driven off and naturally rises to the high point of the system. If a pocket happens to be in the piping, the air collects in it and stops the gravity flow. Another objectionable feature of the connections shown in Fig. 2 is that the indirect heater and the summer water heater have common connections to the storage tank. In a case of this kind, usually localized circulation results, thus by-passing the storage tank. Fig. 3 indicates how the indirect heater connections should be made in correcting this job. Note the provisions for blowing down the indirect heater coils as a result of placing the two valves in the bottom connection to the storage tank.

Upon discussing the original installation with the owner, an effort was made to understand how such a large collection of bad practices could occur on one job. When the owner indicated that he had hired a man who merely was handy with a pipe wrench to do the job, there was no further doubt as to why this installation stands out as an example of what not to do in making pipe connections.

"1934 looks like the recovery year and people have been taught by our government to spend money. An intelligent effort to show the home owner how an expenditure on his heating system will give him greater comfort and greater economy certainly can not fail to reap a handsome reward for the alert merchant."

Automatic Heat *and* Air Conditioning Section



FEBRUARY, 1934

The public's interest in automatic heat and air conditioning is being met by live dealers with new products and up-to-date sales methods.

For that dealer—our reader—we offer the following timely editorial features—

1—Big Market for Air Conditioning

2—Awnings Reduce Cooling Load

3—Oil Burner Jobs are His Showrooms

4—Small Residence Air Conditioning

5—This Job is Gas Fired

6—Electricity Facts

7—Owners of Stokers are His Best Sales Prospects

8—A.S.H.V.E. Annual Meeting Program Exposition

9—Oil Burner Code Authority

1900 PRAIRIE AVENUE
CHICAGO, ILLINOIS

KAINER GOVERNORS C-3 & B-2

-are MONEY SAVERS

for the Home Owner

that Home Owners *Will Buy*

TO OBTAIN FUEL ECONOMIES AND AUTOMATIC WATER CONTROL ON HOT WATER HEATING SYSTEMS

STANDARD GOVERNOR C-3

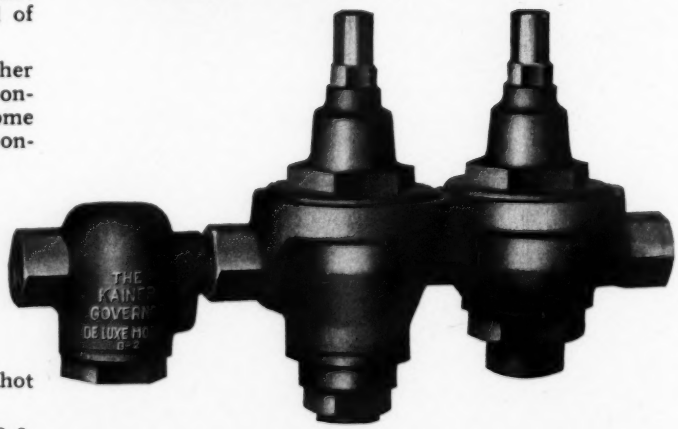
The Kainer Governor STANDARD model C-3 is exceptionally popular in the heating field. A splendid all-round fast selling item which because of a slightly simplified construction carries a somewhat lower list price without sacrificing sturdiness or the reliable accurate performance so essential in a heating specialty of its kind.

Easily installed it provides a fully closed hot water system with AUTOMATIC control of the hot water.

Periodic inspection without disturbing either the unit or its adjustments is a decided convenience to both heating contractor and home owner, a feature adopted, created and sponsored by KAINER.

DE LUXE GOVERNOR

MODEL B-2



Choosing the RIGHT control for the hot water plant IS IMPORTANT.

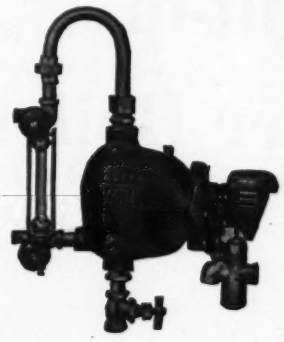
The Kainer Governor DE LUXE model B-2, the LEADING unit and PIONEER of our entire line has an enviable "three point" record. First, thousands of residentials are DE LUXE equipped. Jobbers cannot keep them on their shelves because of popular demand and contractors everywhere are eager to install this profit producing, time proven DE LUXE unit which embodies many additional improvements for safety, accessibility and the most sound engineering principles we have been able to employ. KAINER PRODUCTS are the outgrowth of twenty years of manufacturing experience. When ordering specify Kainer GOVERNOR DE LUXE model B-2.

Write Us Today!
for our
10 POINT STORY & PRICE LIST

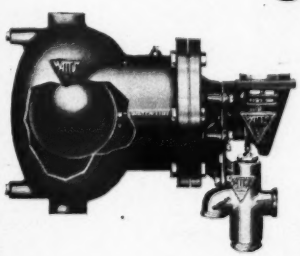
KAINER & COMPANY -- 761 Mather St. -- CHICAGO

The Outstanding Buy in Feeders, Cut-Offs and Circulators

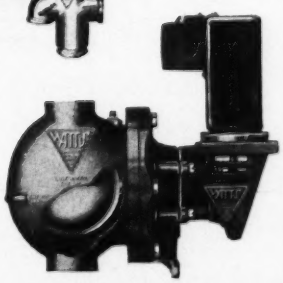
No. 60 Safety Feeder for steam pressures up to 15 lbs.

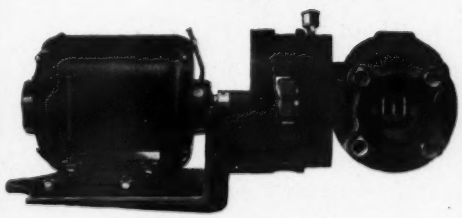


No. 80 Single Feeder for steam pressures up to 75 lbs.



No. 90 LW Low Water Cut-Off for pressures up to 15 lbs.





No. 147 Water Circulator

WATTS

The special features and extra value built into Watts Boiler Feeders, Low Water Cut-Offs and Circulators make them the greatest bargains ever offered in such products.

In this you will agree if you examine these Watts products at the International Heating and Ventilating Exposition, New York, February 5th-9th, 1934. But if unable to do so, here are a *few* of the outstanding features.

Watts No. 60 Feeder can be installed into the gauge glass tappings in three positions. Either before or after installation, it can be easily and inexpensively changed to include a Low-Water Cut-Off Switch, a Combination Low Water and Pressure Cut-Off Switch, a Dual Feeder, a Dual Feeder with Low-Water Switch, or a Dual Feeder with Low-Water and Pressure Switch. The Switch changes can be made by removing only four screws. To make a Dual Feeder out of it, all that is necessary is the simple addition of the over-flow valve by removing one plug. You never disturb the operation of the Feeder.

All parts can be easily reached for inspection or cleaning. Bronze strainer can be removed for cleaning by unscrewing one plug. Water cannot get under valve guide or into bellows.

The Watts No. 90 L. W. Cut-Off, notwithstanding its many advantages, sells at a price that will enable you to include it in the most competitive job.

Its heavy, seamless copper float affords a safe leverage tending to trip the switch. Has a hydraulically formed corrosive-proof bellows seal, ample float travel space and the tried-and-true Penn Electric Switch. The bellows is perfectly hung in a balanced position so that no one part stands a greater strain than any other part.

Watts No. 147 Circulator has a pressure balanced impeller which assures an even, steady water flow and avoids water pulsation noises. The direction of the flow can be changed with a minimum amount of labor and the circulation is designed so as to guard against alignment troubles.

All vital parts are protected against tampering, thereby minimizing service calls. The motor has been chosen, after a most careful engineering inspection, from the standpoint of quietness and durability.

For full particulars write for catalog.

JOHN G. KELLY, INC.
Distributors
210 East 45th St., New York, N. Y.

WATTS REGULATOR CO.
Lawrence, Mass.

Makers of Water and Steam Regulating Devices since 1874

Canadian Representatives: W. H. Cunningham & Hill, Ltd.
269 West Richmond St., Toronto 2, Canada.

Burnham Builds a Built-in Oil Burner Boiler

IT is so designed and built that practically any of the leading oil burners can be a direct part of the inside of the boiler. A direct part of it, mind you, and not an attachment projecting out in front.

It combines all the advantages of the usual built-in type, and overcomes all its disadvantages.

It has several features all its own that are decidedly revolutionary. You will welcome them all.

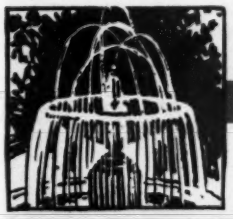
Can't go into particulars here, but we will be glad to send you full facts.

The boiler will be on exhibition at the American Oil Burner Show, March 5th to 9th, in Philadelphia.

Burnham Boiler Corporation

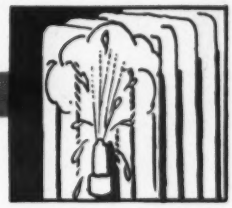
IRVINGTON NEW YORK

Representatives in all principal cities of the United States and Canada



A FOUNTAIN IS A THING OF BEAUTY...

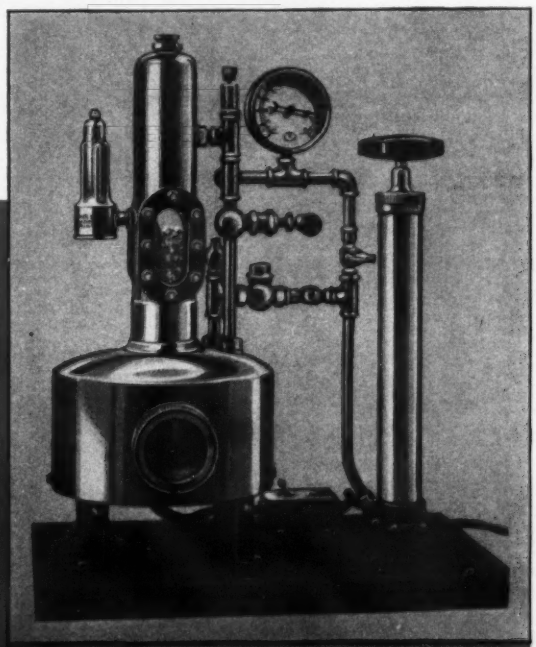
BUT NOT IN A VENTING VALVE

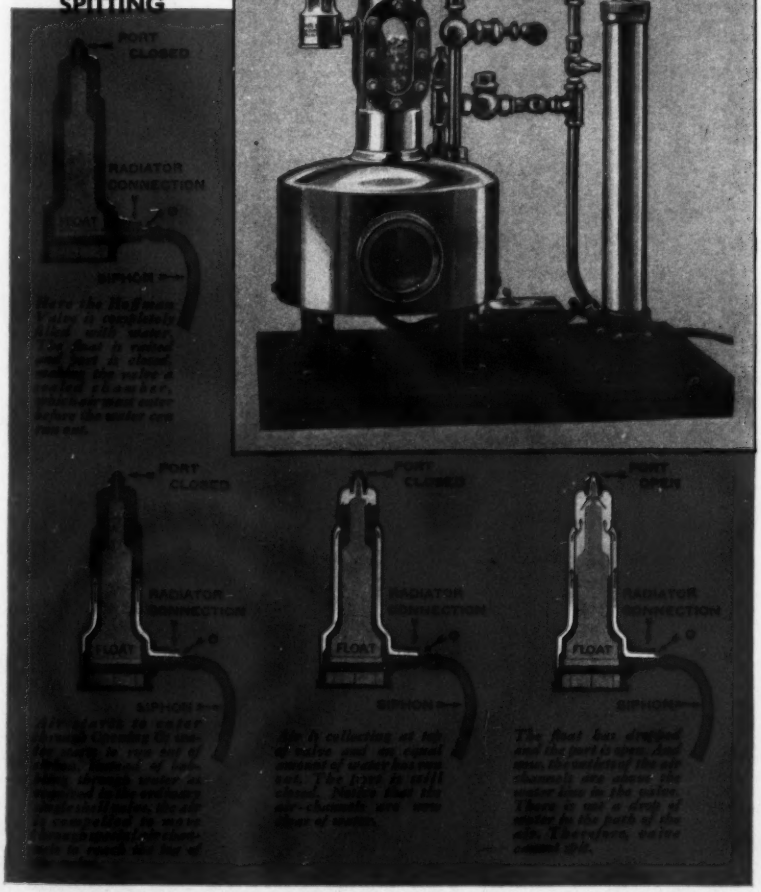


HOFFMAN VALVES

proved LEAKLESS *by Gruelling Test!*

HOW THE PATENTED HOFFMAN DOUBLE SHELL PREVENTS SPITTING





NRA WE DO OUR PART

Here is the test that amazes everyone witnessing it . . . *the test that demonstrates beyond question the absolutely leak-proof qualities of Hoffman Siphon Air and Vacuum Valves!*

In the apparatus shown here are duplicated all the water and pressure conditions which may occur in a one-pipe steam heating system. When a Hoffman Valve is installed on the machine, you will see that it is impossible to render it inoperative, even under severest usage. Water drains from the valve with true syphonic action—it will not waterlog nor leak a drop when water is surged against it. Venting is always swift, quiet and certain!

When you see this test you will realize that the patented Hoffman Double Shell is a *positive safeguard* against noisy venting and possible water damage to client's walls and floors. *And only Hoffman Valves have this separate air-and-water channel construction.*

The Hoffman "Spitless" Test is available to all who ask to see it. Send the coupon—a Hoffman representative will call and conduct the test in your own office. It takes but a few moments and will give you plenty of food for thought in the matter of venting valve performance.

Hoffman Valves are sold by leading wholesalers of plumbing and heating equipment everywhere.

Hoffman Quality Costs No More

Hoffman Specialty Co., Inc., Dept. RX95
Waterbury, Conn.

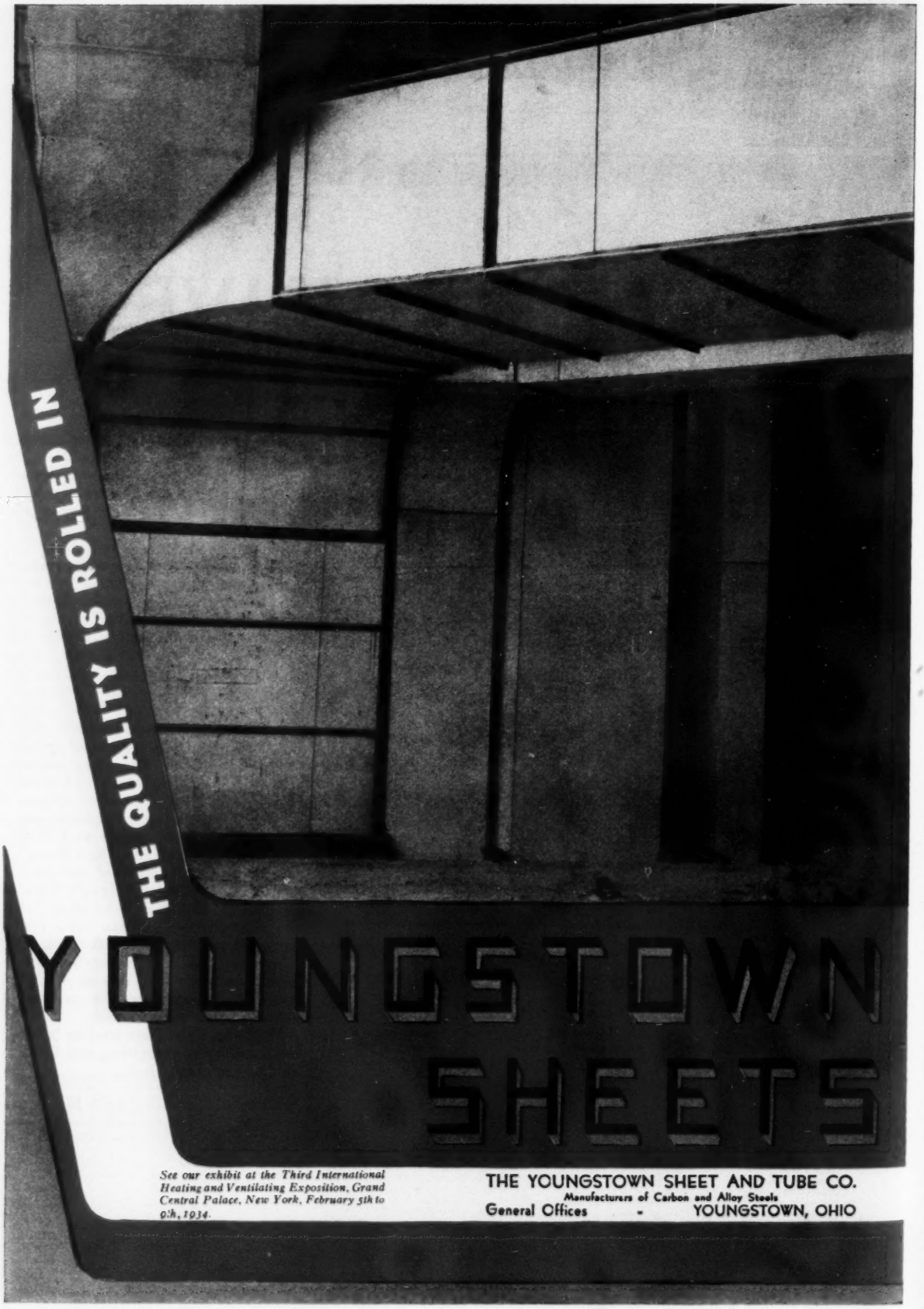
Show me the Hoffman "Spitless" Test ☐ Send me bulletin on Hoffman's Complete Line of Venting Valves ☐

Name _____

Address _____

City _____ *State* _____

Also Makers of Hoffman Traps and Hoffman-Economy Pumps


THE QUALITY IS ROLLED IN
YOUNGSTOWN
SHEETS
See our exhibit at the Third International Heating and Ventilating Exposition, Grand Central Palace, New York, February 5th to 9th, 1934.
THE YOUNGSTOWN SHEET AND TUBE CO.
Manufacturers of Carbon and Alloy Steels
General Offices - YOUNGSTOWN, OHIO

The Medical Arts Building, Duluth, Minnesota. Completely equipped with the Modutrol System. Erickson & Co., Architects; Ellerbe & Co., Consulting Architects; Charles Foster, Engineer.

■

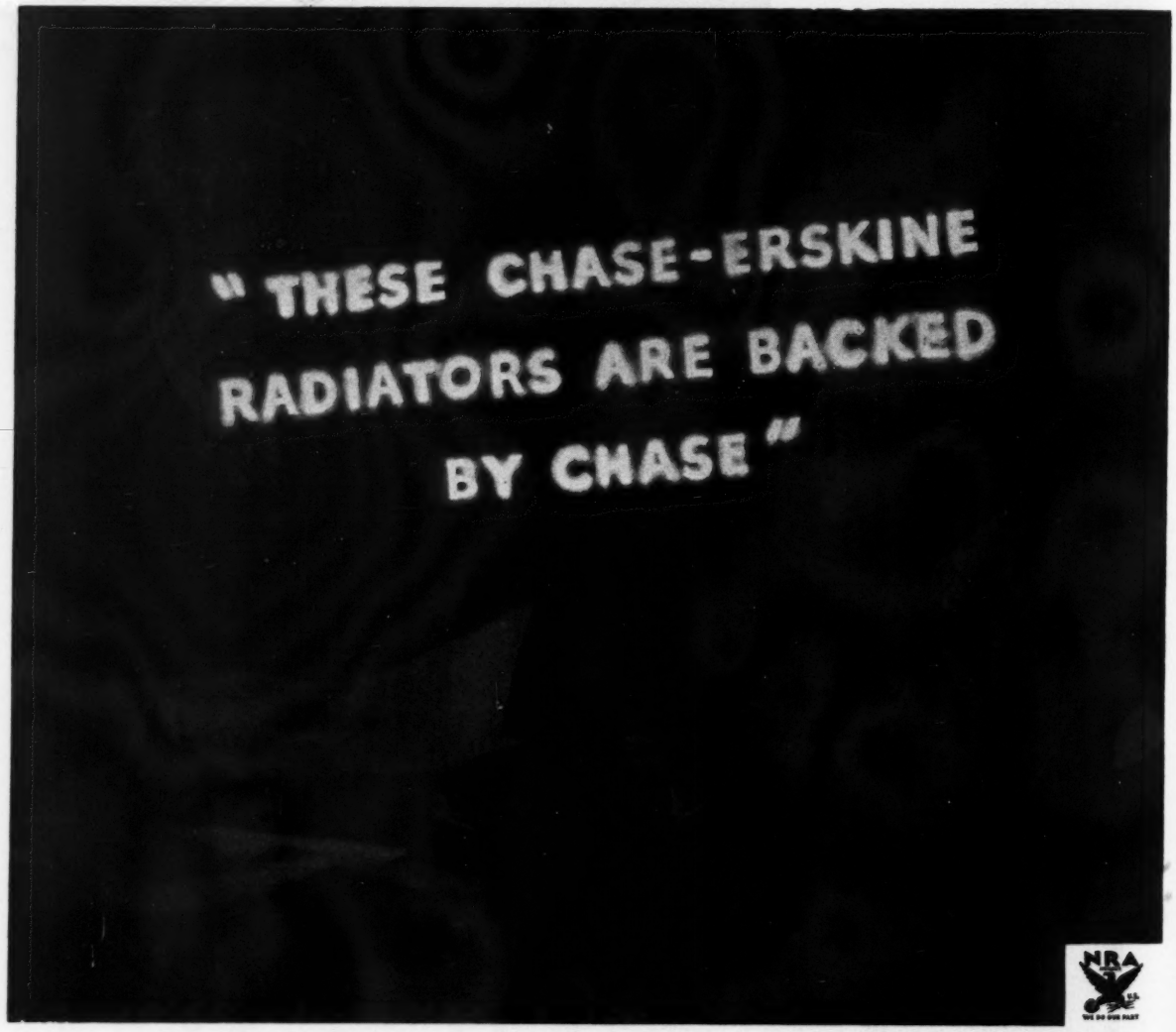
COOLING *and*
HEATING IN

PERFECT *Co-ordination*

■ Every Minneapolis-Honeywell Modutrol System is tailor-made for each installation and its various controls are completely unified into one harmonious control system . . . Such perfect co-ordination makes it possible to maintain temperature ***within a fraction of a degree*** at all times in the cafeteria of the Medical Arts Building which is equipped with heating, cooling and humidifying controls. This close regulation is accomplished despite the widely fluctuating temperatures in such a restaurant and regardless of the fact that outside temperatures in a single 24 hour period ranged, as on June 20 and 21, 1933, from 58° to 84° . . . There is no finer control system available than the Modutrol System. Minneapolis-Honeywell Regulator Company, 2801 Fourth Avenue South, Minneapolis, Minnesota.

MINNEAPOLIS-HONEYWELL

Control Systems



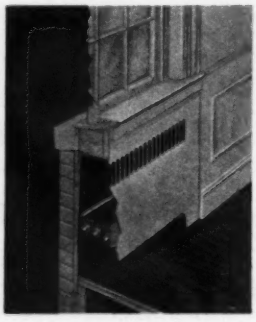
THE MAKER'S NAME does make a difference

Place yourself in your customer's shoes. Wouldn't you have more confidence in a copper radiator or water heater made by a *copper* company? That's why it's just sound common-sense to sell Chase-Erskine products. They're backed by Chase Brass & Copper Co. . . . experienced workers in copper and its alloys.

Remember that the maker's name is as important to most men as the obvious mechanical advantages of the product.

CHASE-ERSKINE COPPER RADIATOR

For use with either steam or hot water. Tubes are ¾" octagonals of .020 copper. Fins, .010 copper protected by side plates. Tubes and fins joined by copper-to-copper expansion process . . . no solder. Ready to ship in complete variety of lengths and widths. Send for more information.

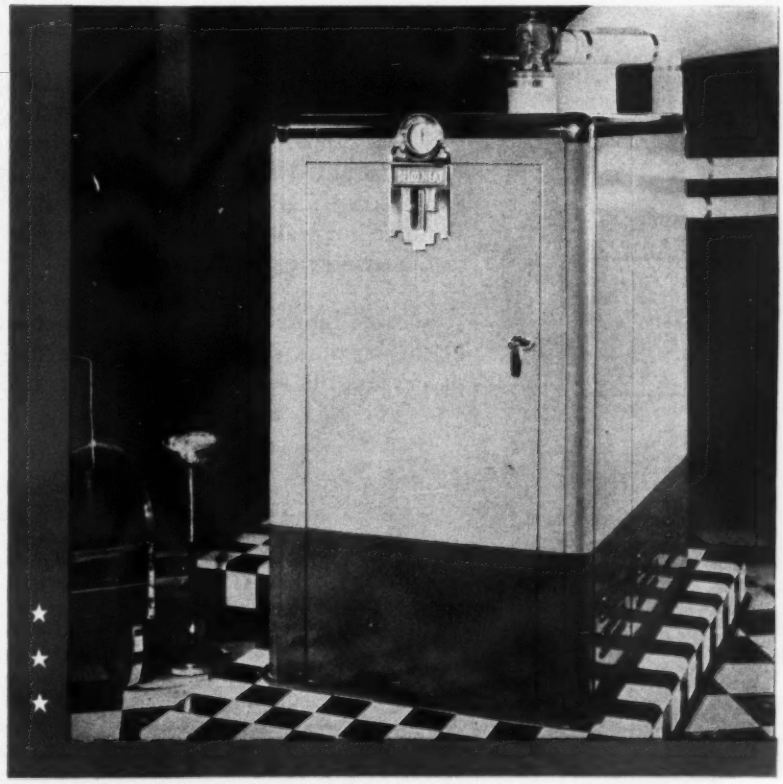


See the Chase-Erskine exhibit at the Heating & Ventilating Exposition. Booth 55 — Grand Central Palace, New York.

CHASE BRASS & COPPER CO.
—INCORPORATED—
Erskine Radiator Division
WATERBURY • CONNECTICUT

NOW...DELCO ANNOUNCES THE LATEST ACHIEVEMENT IN AUTOMATIC HOME HEAT

The new harmonized Delco Heat Boiler



Engineered as one unit from the ground up. Automatic burner, boiler, domestic hot water heater... harmonized into one beautiful compact cabinet

Here is the newest contribution to greater home comfort from the makers of the famous Delco Heat Oil Burner...a complete, harmonized heating unit that is a modern marvel in heating efficiency and fuel economy.

The unlimited facilities of Delco Research Laboratories...the influence of General Motors' 25 years' experience with the combustion of liquid fuels are clearly reflected in this great new product. Every point of construction has been proved by hundreds of painstaking tests in scores of homes. And the results show up in a brilliance of performance that is entirely new.

Remarkable Heating Efficiency

This new Delco Heat Boiler combines the super-heat-producing qualities of the Delco Heat Oil Burner with the amazing heat-absorbing efficiency of a remarkably designed boiler. A new degree of heating efficiency and economy has been attained through pre-heating the air before combustion, entirely surrounding the combustion chamber with water, employing a larger heating surface; and multiple fins which scientifically control the heat travel upwards...delivering all possible heat into the home.

Easy to Install

Basically, the new Delco Heat Boiler follows the accepted up-draft design... thoroughly understood by the heating trade for 40 years. It will go into any basement without alterations in doors or partitions. The actual installation is so simple that nothing can go wrong.

Mail Coupon

Delco Heat dealers, with the fastest-selling conversion burner and the remarkable new Delco Heat Boiler are in the position to meet *all* home heating requirements with outstanding products. More money will be invested in 1934 for newspaper and magazine advertising than ever before. Get your share of this Delco Heat business. Send the coupon today for full details about the Delco Heat Boiler and the profit-making possibilities of the Delco Heat franchise in your territory.

Delco Heat Boiler

A GENERAL MOTORS VALUE

DELCO APPLIANCE CORPORATION,
Division of General Motors,
Dept. B-210, Rochester, N. Y.

Please send full details about the new Delco Heat Boiler and the Delco Heat franchise.

Name.....

Street Address.....

City.....*State*.....

Of course . . . . . he blamed the oil burner . . .

A certain owner, deciding to change from coal to oil in heating his home, employed a contractor to put a gun type burner of reputable make in his old coal fired boiler. Bitter disappointment, weeks of adjustment, of profitless service. Finally the burner was taken out and replaced with another, equally reputable. Still no result.

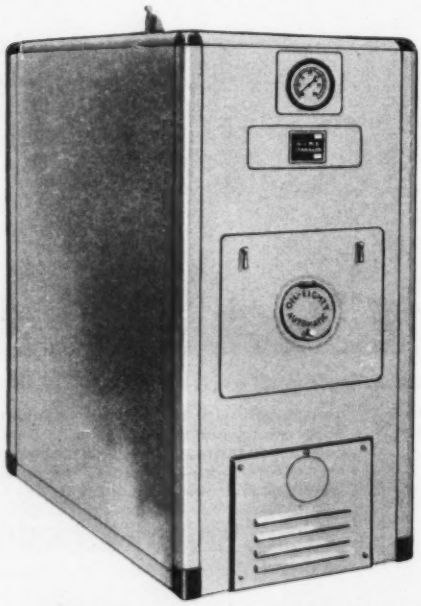
The owner then decided that a rotary burner was right for his boiler, and installed one of good reputation. More disappointment, and mounting prejudice in the owner's mind against oil heat, culminating in the decision to go back to coal firing.

Then someone suggested, "Maybe the boiler is at fault. Coal burning and oil firing are two very different things." The owner investigated. Became interested—became impressed to the point of action—and installed a Fitzgibbons OIL-EIGHTY AUTOMATIC, with a well-known oil burner . . . . result—plenty of heat, winter and summer hot water, important saving in fuel and entire satisfaction to the owner.

It became immediately apparent that with the new boiler any one of the burners tried out and discarded would have been entirely successful. But several heating contractors lost money to find it out.

NRA WE DO OUR PART

See this boiler on display at the Heating and Ventilating Show, Grand Central Palace, New York City, Feb. 5th to 9th.



The moral of this by no means unique tale is: Protect the burner you install, protect your profits, protect your business reputation—by advising the use of the OIL-EIGHTY AUTOMATIC, the boiler designed from the ground up for oil burner operation, built by boiler-makers of high standing for half a century. Give your customer a modern, copper-steel boiler that provides the combustion and heat transfer conditions demanded for oil burner operation . . . . and, incidentally, a boiler which supplies year-round hot water without a tank, or where a tank is already installed, keeps it always filled with hot water.

WRITE FOR OIL - EIGHTY AUTOMATIC BULLETIN-D—it gives complete details

Fitzgibbons Boiler Company, Inc.

GENERAL OFFICES: 570 SEVENTH AVE., NEW YORK, N. Y.

Works: OSWEGO, N. Y.

BRANCHES AND REPRESENTATIVES IN PRINCIPAL CITIES

Fitzgibbons

OIL-EIGHTY AUTOMATIC

Leadership

ALL the prestige of world leadership exerts its tremendous influence for you as an Oil-O-Matic dealer. Oil-O-Matic again led the industry for the past year. Oil-O-Matic dealers sold 27½% more burners than in 1932!

Every home-owner, every architect, contractor or building operator you approach in selling Oil-O-Matic, is easier to approach *because* you're selling Oil-O-Matic. He knows Oil-O-Matic's reputation.

Look over the Oil-O-Matic line for 1934. It's the only oil burner line that builds a *year-round* business for you. An Oil-O-Matic burner for every need—four sizes for home and large building heating—two leading makes of Boiler-Burner units with Oil-O-Matic built in—an Oil-O-Matic commercial oil burning range unit, and last of all, the newest, "hottest" money-maker of all—

Oil-O-Matic Water Heater!

Sensational in performance—sweeping to astonishing popularity. Sells on its economy, its dependability, its convenience and its low price. Three sizes, for homes, apartments, barber and beauty shops, schools, hospitals, hotels, etc. Enormous savings on operating costs over usual water heating methods. Fully automatic—burns low-cost fuel oil.

Send the coupon—get going now with the line that will carry you to leadership locally.

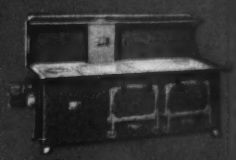
WILLIAMS OIL-O-MATIC HEATING CORPORATION
Bloomington, Illinois

Builders also of the famous Ice-O-Matic Domestic and Commercial Refrigeration

The Oil-O-Matic Burner Model K1.5 (above) for small homes. *Model KB* for homes of medium size. *Model J* for larger homes — apartments — commercial uses. *Model JJ* for largest homes apartments, schools, churches, hospitals, and semi-commercial use.

Oil-O-Matic—Orr & Sembower Boiler-Burner, in 5 sizes for both steam and hot water.

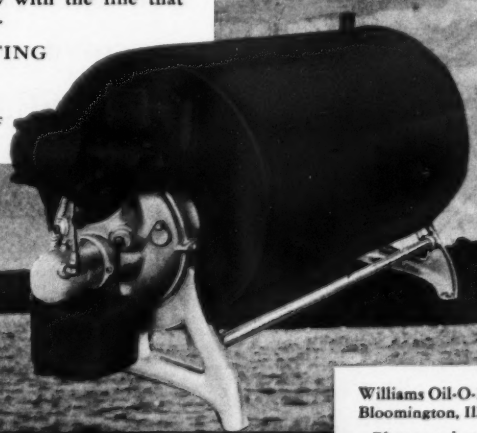
Oil-O-Matic—CRANE unit, as sold by CRANE Company.



Oil-O-Matic—South Bend Range. Semi-automatic, for large kitchens—hotels, restaurants, schools, hospitals, steamships, dining cars, etc.

• • •

(At Left) Oil-O-Matic Water Heater. Boiler, burner and tank in single unit. Fully automatic. 3 sizes. Also furnished with unit type heater for room heating.



WILLIAMS
OIL-O-MATIC
HEATING
LISTED AS STANDARD BY UNDERWRITERS' LABORATORIES

Williams Oil-O-Matic Heating Corporation, Dept. D-2
Bloomington, Ill.

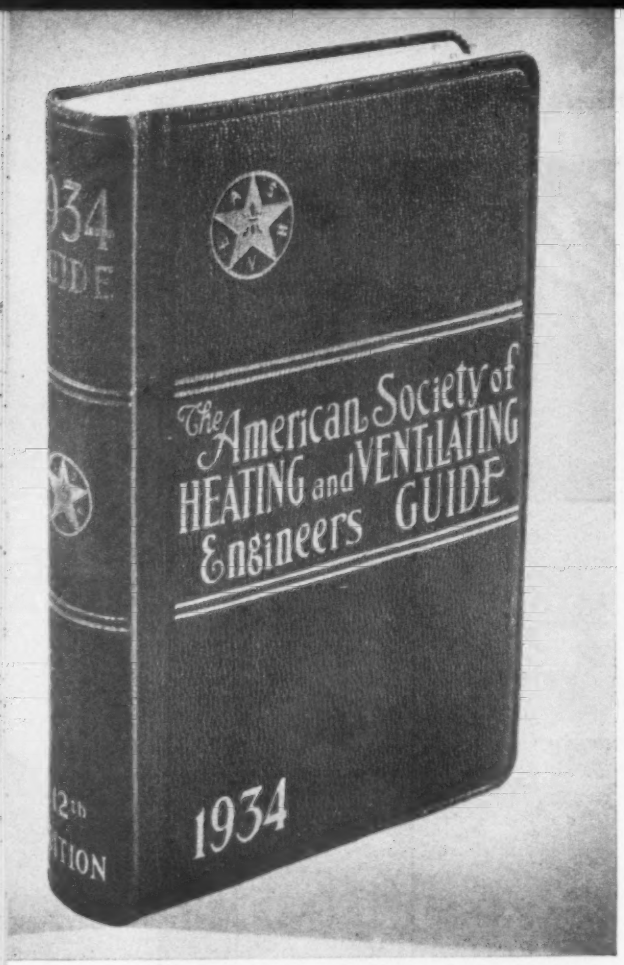
Please send me full details regarding Oil-O-Matic dealer Sales License for this territory.

Name.....

Address.....

City.....*State*.....

Present Business Connection.....



854 Pages Size 6x9 Inches Red Flexible Cover

A GOLD MINE of INFORMATION

• • •

Ready for Service February 15th

• • •

The A. S. H. V. E. GUIDE 1934

•

AIR CONDITIONING
VENTILATING
HEATING
FACTS

- that are indispensable
- that are authoritative
- that are practical

Use FACTS to sell your services and to solve your engineering problems. DON'T SEARCH FOR FACTS—Consult THE GUIDE 1934 — 42 Chapters of Technical Information — the Catalog Data of 100 Manufacturers—Indexed for Quick Reference.

Order THE GUIDE 1934 Now
Single Copies $5.00

Check or money order should accompany your order.

Contents of THE GUIDE 1934

CHAPTER

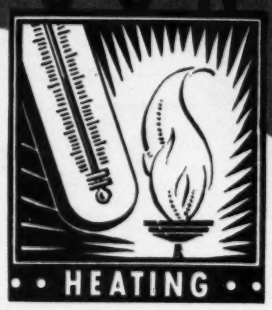
1. Thermodynamics of Air Conditioning
2. Ventilation and Air Conditioning Standards
3. Industrial Air Conditioning
4. Natural Ventilation
5. Heat Transmission
6. Air Filtration
7. The Heating Load
8. The Cooling Load
9. Central Fan Air Conditioning Systems
10. Cooling Methods
11. Humidifying and Dehumidifying Equipment
12. Unit Air Conditioners and Coolers
13. Unit Heaters and Ventilators
14. Temperature and Humidity Control
15. Air Pollution
16. Air Cleaning Equipment
17. Fans
18. Sound Control
19. Air Duct Design
20. Air Distribution
21. Industrial Exhaust Systems
22. Central Fan Heating Systems
23. Mechanical Warm Air and Fan Furnace Systems
24. Gravity Warm Air Systems
25. Heating Boilers
26. Chimneys
27. Fuels and Combustion
28. Automatic Fuel Burning Equipment
29. Fuel Consumption
30. Radiators and Gravity Convectors
31. Steam Heating Systems
32. Steam System Piping
33. Hot Water Heating Systems
34. Pipe, Fittings, Welding
35. Heat Losses from Bare and Insulated Pipes
36. District Heating
37. Radiant Heating
38. Electrical Heating
39. Water Supply Piping
40. Test Methods and Instruments
41. Properties of Air, Water and Steam
42. Heating and Ventilating Standard Terms

INDEX TO TECHNICAL DATA SECTION
CATALOG DATA SECTION
INDEX TO MODERN EQUIPMENT
INDEX TO CATALOG DATA SECTION
ROLL OF MEMBERSHIP

AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS

51 MADISON AVE., NEW YORK CITY, N. Y.

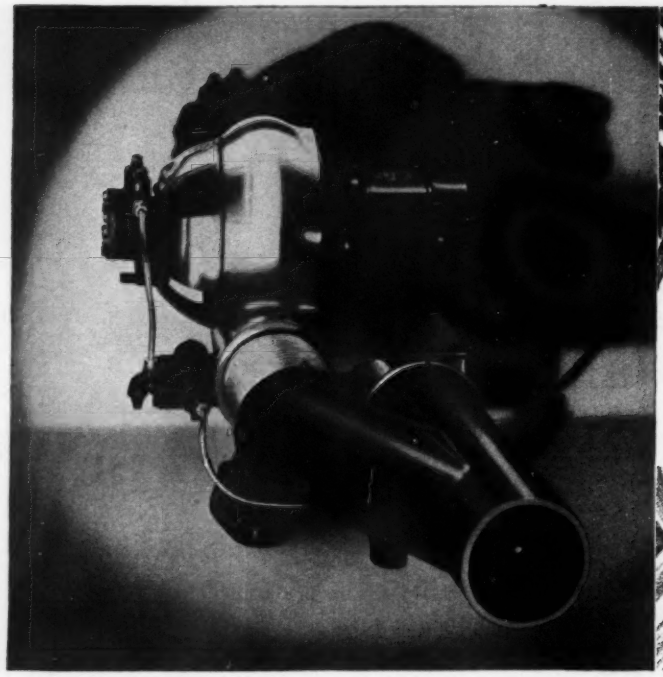
AIR-CONDITIONING



With BRYANT equipment you are in a position to meet any air-conditioning requirement for residential or commercial use. A Bryant air-conditioning engineer will be glad to assist you.

Let's the Pup be your Furnace Man and Weather Man too.

THE BRYANT HEATER COMPANY
17822 ST. CLAIR AVENUE • CLEVELAND, OHIO
Pioneers and leaders in automatic gas heating for more than twenty-five years



WAYNE MISTOIL BURNER

WAYNE *is winning the battle of* COALITOSIS !

THE WORLD'S FINEST OIL BURNER WINS WITH THE WORLD'S FINEST ADVERTISING

WAYNE leads again—with a body blow that knocks out "Coalitosis"! Wayne's new advertising campaign is a powerful weapon in the hands of Wayne dealers—a scientific tool with which they can increase sales and profits. It's new! different! Unusual sales strategy assures more successful interviews, more quick sales. Use the coupon below to learn more about it.

Dealers! This Powerful Campaign Assures Your Profit!

10 MAJOR ENGAGEMENTS 10 VICTORY BARRAGES!

COALITOSIS COSTS THE AVERAGE HOME OWNER $132.11 YEARLY

YOU *can shock buyers into action,* overcome inertia and sell more burners now with Wayne's 10 Barrage Victory Campaign and the "Coalitosis" Evidence Plan developed by Wayne. "Coalitosis" *is costing every home owner who is still using coal for heating $132.11 yearly,* estimated conservatively. You can prove it! That's only one of the arguments which prove that delay is *not* good business, and supply the buying urge. With this plan you can give facts and figures which will absolutely annihilate sales resistance. *You are overlooking something* if you're not selling Wayne Mistoil Burners. Enlist now!

A CAMPAIGN THAT GETS RESULTS BY SHOCKING THE BUYER INTO ACTION!

ENLISTMENT COUPON

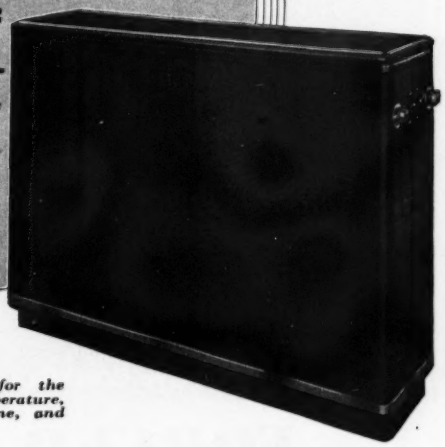
Wayne Oil Burner Corporation
602 Glasgow Ave., ... 1933
Fort Wayne, Ind.

Tell us more about Wayne's war on Coalitosis. We may want to enlist in your Mistoil army.

NAME_____
ADDRESS_____
CITY_____ STATE_____

for the Business Man

WHO IS READY TO SHARE IN THE PROFITS OF THE FASTEST-GROWING NEW GIANT INDUSTRY



Floor-Type Comfort Unit—for the year-round control of the temperature, humidity, cleanliness, volume, and distribution of air.

An Opportunity TO DISTRIBUTE A COMPLETE LINE OF

AIR CONDITIONING*

You've watched Air Conditioning . . . watched it grow, swiftly, amazingly, into an industry of vast proportions.

But you've waited until you could get into Air Conditioning with a dominant line of equipment . . . a line that would match the potentialities of a rich market.

Today the opportunity you've waited for is here. Servel has brought Air Conditioning out of the "horse-and-buggy" stage. For 1934, it has perfected a line of modern equipment . . . so complete that it fills every Air Conditioning need, so advanced that you can sell it promptly, profitably.

Servel brings you floor and suspension-type comfort units for year-round Air Conditioning, self-contained room coolers, massive 7-ton and 10-ton refrigerating machines for heavy-duty installations . . . all based on the rich experience of a refrigeration pioneer . . . all as outstanding as Servel Electric Refrigeration and Electrolux Gas Refrigerators.

Add to this Air Conditioning line, if you like, the world's foremost Commercial Refrigeration equipment . . . machine units for every capacity, Humidraft chilling units, self-contained milk coolers, water coolers, beer bars.

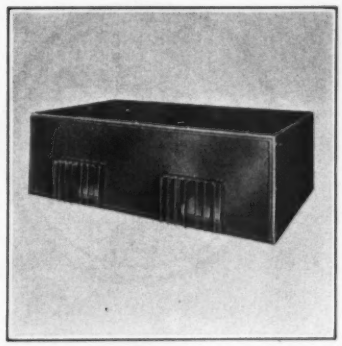
Volume and profits await the business man who gets into Air Conditioning . . . today . . . with the line that is quickly taking the lead. Distributor and dealer franchises are now being arranged. Wire or write immediately for details of the powerful advertising and sales program. Servel Sales, Inc., Evansville, Ind.

SERVEL

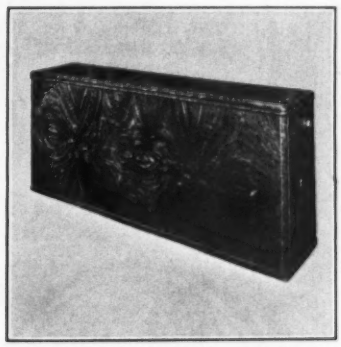
Air Conditioning

AND COMMERCIAL REFRIGERATION

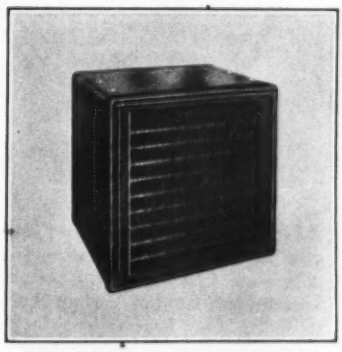
*True Air Conditioning performs many functions . . . cools and dehumidifies in Summer . . . heats and humidifies in Winter . . . circulates, filters, and freshens the year round. *Servel Air Conditioning is complete Air Conditioning.*



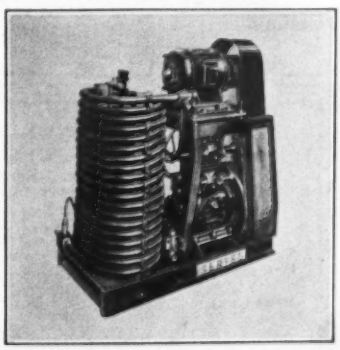
Suspended-Type Comfort Unit—for all-season, heavy-duty Air Conditioning. To be suspended from the ceiling or in wall ducts.



Self-Contained Cooling Unit—for Summer use. This "package job" is readily portable, and can be installed anywhere with ease.



Suspended-Type Cooling Unit—for Summer use. Compact, efficient, powerful. To be suspended from the ceiling or in wall ducts.

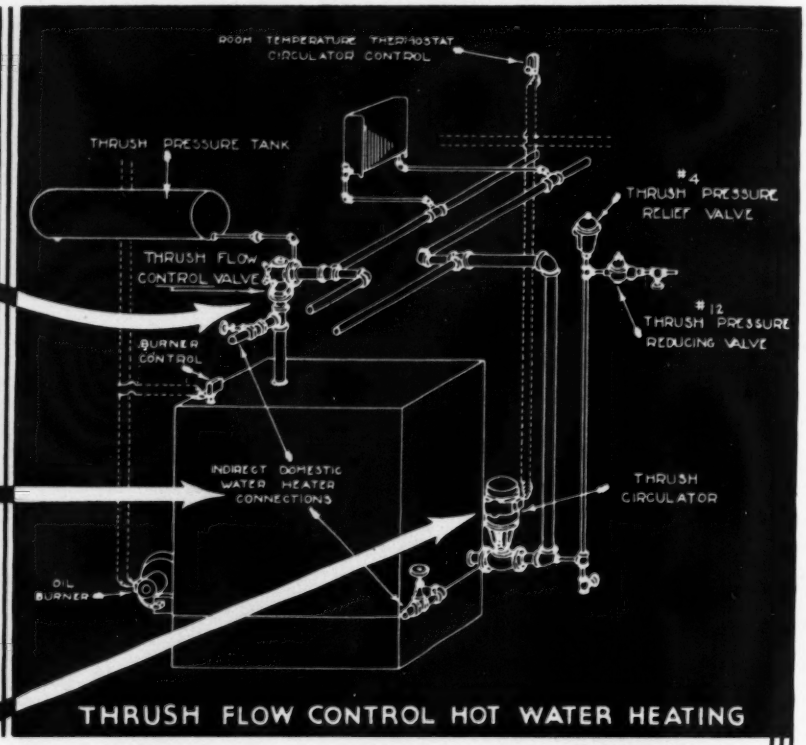


Refrigerating Machine Unit—one of the big multiple-ton models developed for Air Conditioning and heavy-duty refrigeration.

Complete FLOW CONTROL *Automatic*

SUMMER OR WINTER DOMESTIC HOT WATER SUPPLY *Really Hot Domestic Hot Water a by-product*

FORCED CIRCULATION *more home comfort and fuel economy*



THRUSH FLOW CONTROL HOT WATER HEATING

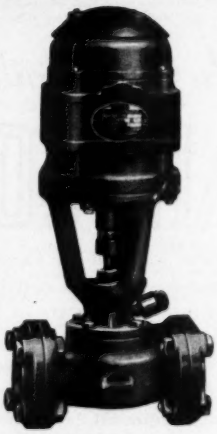
FORCED CIRCULATION *assures greater heating efficiency* FOR YOUR OIL BURNER!

INSURE quick heating and lowest fuel cost on Hot Water Heating jobs fired with your Oil Burner by including the Thrush Flow Control System in every installation. Cure heating troubles that may exist in the heating system itself . . . give your burner a chance to live up to its reputation! Build good will and customer satisfaction by providing *instantaneous* heating.

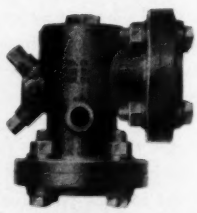
Thrush Flow Control Heating System completely controls the physical distribution of the heating medium. It can be installed on old or new jobs easily and inexpensively. It not only cuts down the running time of the burner by avoiding heat losses and *preventing* needless circulation through the system when heat is not needed—but when heat *is* needed, *forced circulating* hot water reaches every radiator in every room instantly.

A really dependable Domestic Hot Water supply at negligible cost is assured, *with complete freedom from over-heating* when burner is operated in the summer. It's the simplest and surest method of control yet developed. *Use the coupon to ask for our new booklet now.*

Exhibiting at the Oil Burner Convention and Exposition—Philadelphia, March 5-9.



Thrush Water Circulator



Thrush Flow Control Valve (Patented)

MAIL THIS COUPON!

H. A. Thrush & Co., Box 459, Peru, Ind.

Please send booklet describing Thrush Flow Control Heating System and its advantages for use with mechanical firing devices.

Name_____

Address_____

City_____ State_____

H. A. THRUSH & CO.
PERU, INDIANA.

DOMESTIC ENGINEERING
Automatic Heat and Air Conditioning Section

February, 1934

Big Business Is in Sight

Automatic heat and air conditioning has captured the imagination of the American public. It is prying open the purse of the American home owner because of the year-round comfort which it now offers his family. As a business builder for the store and office, air conditioning is proving its ability to return quick profits.

The progress of air conditioning from the laboratory to the sales room has been prompt and positive. It proved itself over a period of years in the industrial fields where precise results were demanded and were given. With its entrance into the field of human comfort — the home, theater, store, office and institution, the attention of the public was turned toward this new and welcome servant to our convenience and comfort.

Automatic heat has prepared the way for this quick acceptance of the idea of all-year air conditioning. Hundreds of thousands of satisfactory automatic heat plants are freeing home owners from the drudgery of the older type heating equipment. The flick of a finger on a temperature control unit has taken the place of much of the old-time labor in heating the home.

The American public is being won over to the need for automatic heat and air conditioning. The engineering laboratories in hundreds of plants have been busy, the attention of hundreds of companies has been turning toward the home market, thousands of dealers are carrying this new message to millions of prospects.

Big business is in sight for the manufacturer and the dealer in automatic heat and air conditioning.

The Market for Comfort Air Conditioning

1—The Boiler Equipped Home

2—The Warm Air Home

3—Offices and Business Places

How the Dealer One of His

The dealer in automatic heat and air conditioning finds opportunities opening in 1934 which have been lacking for several years. The pickup in general business, the revival of the building industry in the past few months, the drive on the residence market which so many companies are starting, the clearing up of home loan conditions and of taxes with government funds, the big public works program, the better business conditions in farming sections, the appeal of the new products which are being announced—these are some of the factors which make 1934 offer more to the progressive dealer who is willing to go after business.

The market for air conditioning is tremendous. This new industry with its ability to bring new standards of comfort into the home and new profit making possibilities to the store owner is the key to open the door of millions of prospective customers.

The number of homes where complete air conditioning facilities are likely to be provided in the near future runs into hundreds of thousands. The number of homes certain to use some portion of a complete air conditioning system stretches into the millions.

In the commercial market many restaurant owners have found cooling systems a positive booster of daily sales. Beauty parlors, apparel shops, barber shops, dozens of stores and shops, offer a similar opportunity to sell air conditioning as a means of attracting customers.

In offices, another large market is opening. Whether in the private offices of executives or in general offices, air conditioning offers a higher level of comfort and has proved a profitable investment through the resulting greater efficiency of the employes.

Office buildings are finding air conditioning a valuable means of renting vacant offices and of retaining old tenants.

SUGGESTIONS TO DEALERS

The following suggestions to automatic heat and air conditioning dealers were secured from executives who have both planned new products and new methods of selling them. They were secured in order to put before our readers some brief but practical ideas for securing their share of this rapidly developing market.

"I suppose plenty has been said in the past three years relative to making modernizing pay the freight while new building was in the dumps," according to C. V. Haynes, vice-president, Hoffman Specialty Co., Inc., New York.

"But this coming year we can continue to hammer away at this theme with a confidence that is based not on desperate hope, but on facts. Not only does modernizing work offer greater possibilities than ever, but the prospects for a big improvement in new building are decidedly bright.

"As a matter of fact, if our own business is any barometer, we are already experiencing the benefits of a general economic recovery.

"The last six months of 1933 saw a gain of 16 per

Can Make 1934 Best Years

cent in contracts actually awarded for apartments, dormitories, hotels, residences and housing developments. Projected building in this same class for the same period indicates a 173 per cent gain, work to be completed in 1934.

"Our plans are now being perfected, whereby we will offer the heating contractor every means to contact new business and to take full advantage of improving conditions. Obviously, after three years of neglected maintenance and restricted building, things have reached a point where rehabilitation is no longer optional but imperative.

"Our idea of a good 1934 motto for the heating industry is "Sell improved heating before the property owner's dollar is expended in some other direction."

E. N. McDonnell of McDonnell & Miller, Chicago, recalls that " 'Cellar stairs are weary stairs'—which means that Automatic Heat is here to stay and is gaining momentum rapidly. 'Heat your house from your easy chair'—'Run your heating plant with the twist of a button.'

"Automatic boiler water level control completes the convenience of automatic firing. It has opened up a new large market for the dealer, as every one of his previous steam installations is a prospect for the sale of an automatic boiler water level control, or at least a low water cutoff. No automatic steam job should be without this equipment.

"I, therefore, want to take this opportunity to urge every automatic heat dealer to build up his unit sales during 1934 by telling and selling the prospect what he should have for his protection, comfort, and convenience."

SELL A COMPLETE JOB

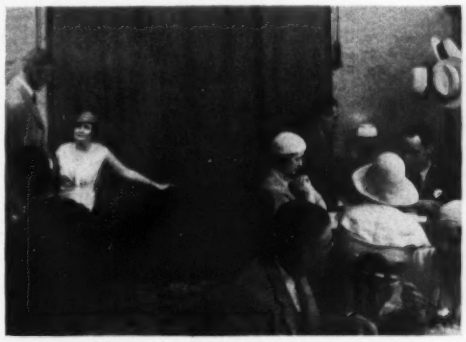
"Unless he is distinctly told differently," Harold C. Schmidt, sales manager of John G. Kelly, Inc., New York, points out, "the home owner, when purchasing automatic heat, is under the impression that he is buying a completely automatic job. His reasons for buying automatic heat are most often based on greater comfort and freedom from 'fussing with the furnace.'

"It would, therefore, seem to be a great mistake to quote on the bare burner and only the necessary controls to make the burner work, and this has been done in the past because of the burner salesman's fear of losing the order or of his fear of competition not quoting on the complete job.

"The average home owner would have a great deal more confidence in the concern he was dealing with, if when he asked for prices, he received a quotation on the burner and necessary controls plus an additional quotation for that extra equipment which the burner salesman feels that the job in question needs to make it a completely automatic and economical installation. This

(Continued on Page 94)

The Market for Commercial Air Conditioning



4—Restaurants and Grills

5—Hospitals

6—Barber and Similar Shops

Awnings Reduce Cooling Load

Fig. 1—Above is a typical awning installation such as is referred to in this article. This and other awnings on this house were used to reduce the summer air conditioning cooling load

Costs are given for summer air conditioning an average residence, with and without sun shades at windows, to illustrate saving both in the original equipment and in its operation

By L. GWATHMEY*

AIR Conditioning — involving the simultaneous control of temperature, humidity, air movement and circulation, and purity—is applied today in varying degrees, ranging from the simple addition of moisture to the dry air of homes in winter to the complete control of all four of the above factors the year around.

The equipment, in its present state of development, required to control the temperature and moisture content of the air in winter, is very different from that required in summer. Therefore the most general classification of air conditioning at the present time is winter air conditioning and summer air conditioning. Each involves the control of all four factors. In winter, however, heat is added to the air to maintain the temperature above that of the atmosphere, and moisture is added to maintain a sufficient relative humidity indoors. In summer, heat is removed to maintain a temperature below that of the atmosphere, and moisture is removed to maintain a suitable and comfortable relative humidity.

The cooling requirement in summer air conditioning is governed by the so-called heat gain of the enclosure which is being cooled. This heat gain is the amount of heat that must be removed to maintain comfortable air conditions, and is made up of the following components:

(1) Heat conduction through walls and windows.
(2) Heat from solar radiation.
(3) Heat given off by people.
(4) Heat from electric lights and other appliances.
(5) Heat from ventilating air and heat given up by the process of dehumidification.

*Air conditioning department, General Electric Company, Schenectady, New York.

Of these components, we are primarily interested in the heat gain from solar radiation.

Solar radiation usually accounts for a very appreciable part of the total heat gain. On a clear day in summer, the total heat energy received by the earth's surface from the sun is approximately 300 Btu. per hr. per square foot. Any object upon which this radiant energy falls will reflect, absorb, and transmit certain proportions of the total received, depending upon its characteristics. Every barefoot boy becomes aware of the fact that dark surfaces become much hotter in the sun than do lighter ones. Temperatures as high as 180 deg. Fahr. have been recorded on dark roofs as a result of solar radiation. It is a commonly observed fact that the decks of ships are painted a light color, and gasoline storage tanks are painted with bright aluminum paint to increase the ability of these surfaces to reflect heat, thereby reducing the amount absorbed and transmitted.

Glass absorbs only 8 per cent of the radiant energy received by it from the sun. It transmits 88 per cent and reflects but 4 per cent. Naturally, the total amount of radiant energy a window receives from the sun depends upon the area exposed and the angle at which the sun rays strike it. In the latitude of Schenectady during summer the ordinary single glass window placed horizontally (as, for instance, a skylight) will transmit about 200 Btu. per hour per square foot. A vertical window with southwest exposure 150, west 130 and south 75.

The use of awnings will eliminate the solar radiation on windows, hence effectively reducing the total heat gain of the enclosure. This permits the installation of lower capacity equipment, with consequently lower first cost and operating cost.

Below is a table showing the calculated heat gain of a typical ten-room house, located in Schenectady, by rooms with and without awnings. The calculations were based on lowering the indoor temperature 13 degrees below that of the outside, and maintaining a suitable relative humidity indoors. The total reduction in heat gain through the use of awnings is 7500 Btu. per hr. or 16 per cent. Thus the required capacity of the cooling equipment is likewise reduced 16 per cent.

Fig. 2—Here are window awnings which had an appreciable effect on keeping the inside temperatures down

AVERAGE COST OF COOLING HOME

Where the average first cost of central plant cooling equipment for a house of average size, construction and window exposure, located in a climate similar to that encountered in Schenectady, is approximately $334 per ton of refrigeration. (A ton of refrigeration is defined as the removal of 12,000 Btu. per hr.) A reduction in heat gain of 7,500 Btu./hr. therefore represents a saving of slightly over six tenth of a ton, or $208. From this must be subtracted the cost of a set of awnings.

It must be understood, however, that in certain cases the window exposure and, consequently, the saving in heat gain through the use of awnings is not sufficient actually to reduce the size of the refrigerating machine.

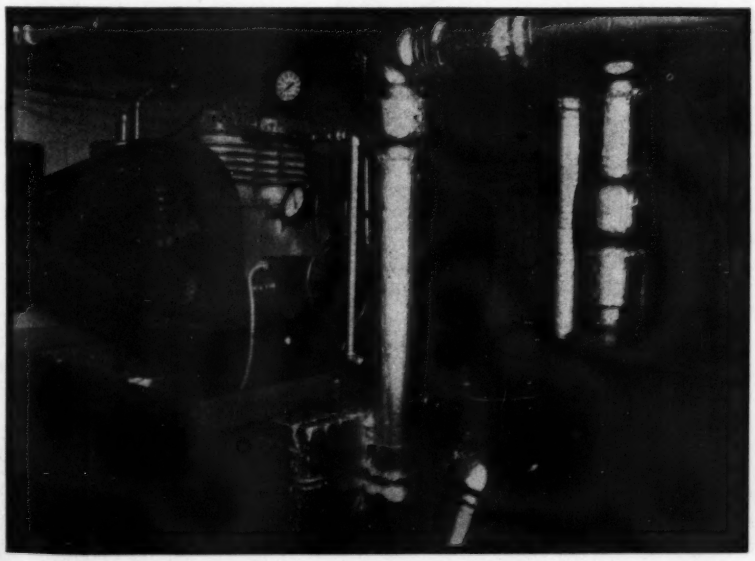


Fig. 3—The building shown in Figs. 1 and 2 is equipped with this air conditioning machine. By just how much equipment of this kind can be reduced in size is illustrated in this article

As regards the saving in operating cost it is assumed that the average cost to operate a ton of refrigeration for a three-month cooling season in Schenectady climate under average conditions is approximately as follows:

Electricity at 3c per KWH	$27.00
Water at 20c per 1000 gallons	3.60
TOTAL	$30.60

In the case of the home referred to in the preceding paragraphs, the total saving in operating cost through the use of awnings would be $23. Again, however, it must be remembered that the particular design and window exposure may be such as to materially alter the size of the entire equipment and bring about an additional saving.

In such cases, the saving is effected in reduction of accessory equipment, such as heat transfer surfaces, fans, etc. It is also easy to imagine houses of different design with appreciably more window exposure, in which cases awnings will effect a reduction in size of refrigerating machine as well as of accessory equipment.

Fig. 4—"In the case of unit installations, for single rooms having window exposures to the sun, savings of as much as 30 per cent in the first cost can be effected"

Room	Heat gain without awnings but using shades	Btu./hr. Heat gain with awnings	Saving in heat gain
Sun Porch	7220	4120	3100
Living Room	2190	2190	....
Hall	280	280	....
Dining Room	1670	1670	....
Library	3220	3220	....
Bedroom No. 1	3030	2450	580
Bedroom No. 2	3240	2240	1000
Bedroom No. 3	2060	1970	90
Blue Room	3210	1710	1500
Study	2970	2970	....
Maid's Room	3110	2620	490
Maid's Room	1550	1310	240
Ventilation	12000	11500	500
TOTAL	45750	38250	7500

From the above, we see that the total net saving in this home made possible through the use of awnings on windows exposed to solar radiation is $126 for the first season. This saving is made up of the $103 net saving in the first cost, plus the $23 saving in operating cost, the latter being realized each subsequent season of operation.

In the case of unit installations for single rooms having window exposures to the sun, savings of as much as 30 per cent in the first cost can be effected, depending, of course, upon the size, construction and area of exposed windows.

The term *heating effect* refers to the number of heat units per hour (Btu.) added to the water in the boiler which are available for circulation to and from the radiators of a hot water heating system. To express this approximately in square feet of direct hot water radiating surface, the value of the heating effect may be divided by 150 (the Btu. per hour per square foot of radiation) or for steam radiators, by 240 (the Btu. per hour per square foot of radiation).

Overall thermal efficiency implies the heating effect divided by the total heat value of the fuel consumed. This represents the proportionate quantity of the total heat in the fuel that becomes available for heating the house.

Balanced smoke pipe dampers, electric water circulators, thermostats and related appliances are sold by this firm to push up their summer sales

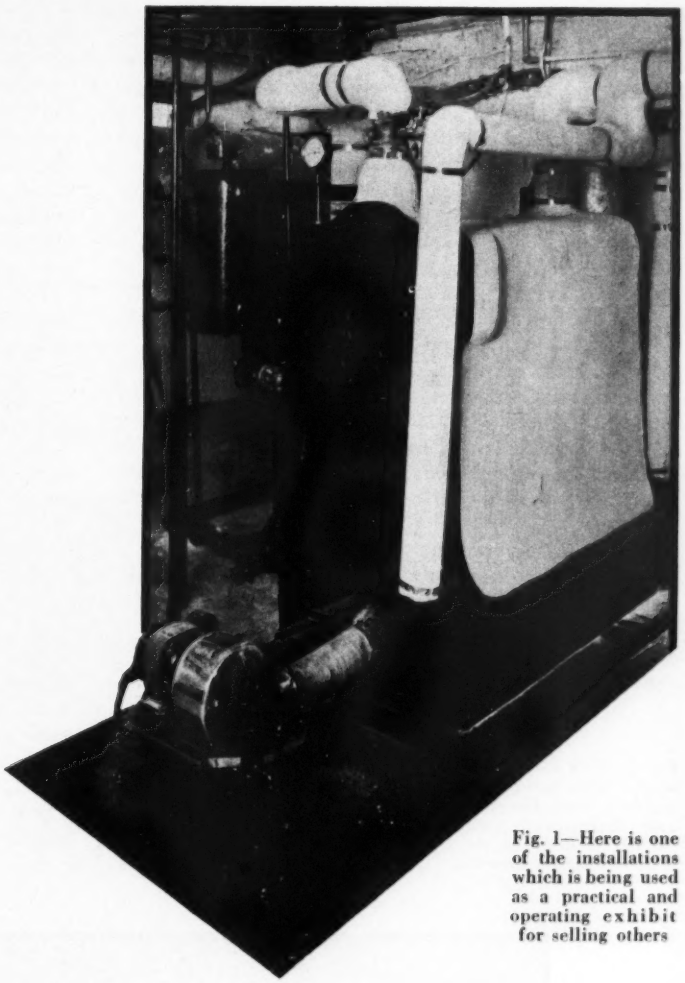


Fig. 1—Here is one of the installations which is being used as a practical and operating exhibit for selling others

Oil Burner Jobs Are His Showrooms

By R. C. Nason

HEATING contractors and dealers who hesitate to enter the oil burner selling field because they have no elaborate display rooms need not hesitate on this account, according to J. I. Brockman, Far Rockaway dealer who stands among leaders in making retail sales of this appliance on Long Island. When this heating contractor entered the oil burner business seven years ago he states that he had the mistaken idea that one must first fit up an expensive showroom. Instead he uses the basements of his customers as order-closing places and has tripled his business volume.

"Three years ago," relates J. I. Brockman, "we determined to paint and otherwise make ship-shape the basements of the next six customers on the condition that we then could use them as demonstration rooms. Each of these special cellars cost us about $50.00 to put into the pink of condition. Then we used them as showrooms. Who can maintain six rented showrooms for three years for $300? Yet this is precisely what we are doing at this time."

That there is unusual selling force in good photographs is generally known to heating contractors. It is doubtful, nevertheless, if many make as excellent use of them as Mr. Brockman, who declares that he can make sales in three out of five cases simply by showing prospects clear photos.

As this dealer states, "The time used to be when the general public was not universally acquainted with the physical appearance of oil burners. Now burners are

so familiar that folks who purchase expect heating satisfaction instead of purchasing so many pounds of finished metal tastily adorned with polished trimmings. Our good reputation backed with camera views usually turns the trick. In the remaining instances we take prospects to one of our satisfactory installations."

The average reader might consider it impossible for an oil burner dealer as successful as J. I. Brockman to conduct his business without exhibiting at his office a generous range of display units. This, however, is not the case. There are on exhibition only one burner and one oil-burning heating boiler. Orders are closed outside.

In calling at prospects' homes Brockman has learned from experience that a vast amount of time is saved by calling when both husband and wife are at home. Were he to sell the wife during the day she usually would say that she must consult her husband and would ask Brockman to come back the following day for the answer.

Wives can be counted on as oil burner enthusiasts. They will try to sell the idea of purchase to their husbands in almost all instances. Evidently the influence of women in securing orders is not so great as many people think. Husbands usually try to defer spending money, particularly in such amounts as the cost of oil burners. So, our heating contractor steps into the breach and makes his home calls in the evening, on Sundays and holidays when both the man and his wife are at home. He does not give the spending member of the family much opportunity to plead poverty over the wishes of his wife.

Although Brockman is a distributor for the entire Long Island territory and has several good sub-dealers, some 40 per cent of his total sales are made personally. He sells more burners than his three salesmen combined, chiefly, he says, because he is willing to work harder and has had more experience. One of his hobbies is getting leads easily and cheaply, a problem that has stumped many heating contractor dealers.

Finding new prospects occurs principally in the summer months. This is how Brockman does it. At the close of the heating season, say, in May, all available service men and salesmen call on users and offer to inspect and adjust the burner and flush out the hot water generators without charge. These points finished, the men ask for the names of friends and neighbors who have shown interest during the heating season just passed. Names are supplied in abundance. Salesmen then call on the prospects and usually receive promises to order, which, however, is not done until October. Then for the next six months Brockman's telephone buzzes merrily and orders are taken at the rate of several daily.

One observes that hot water generators were mentioned. Let it be explained that this dealer installs no burners without also installing automatically controlled year 'round hot water equipment.

Many heating contractors who sell oil burners favor annual service contracts at a stipulated fee. Not so the Far Rockaway dealer. According to him it is preferable to have prospects ask for service, then give it at cost.

(Continued on Page 91)

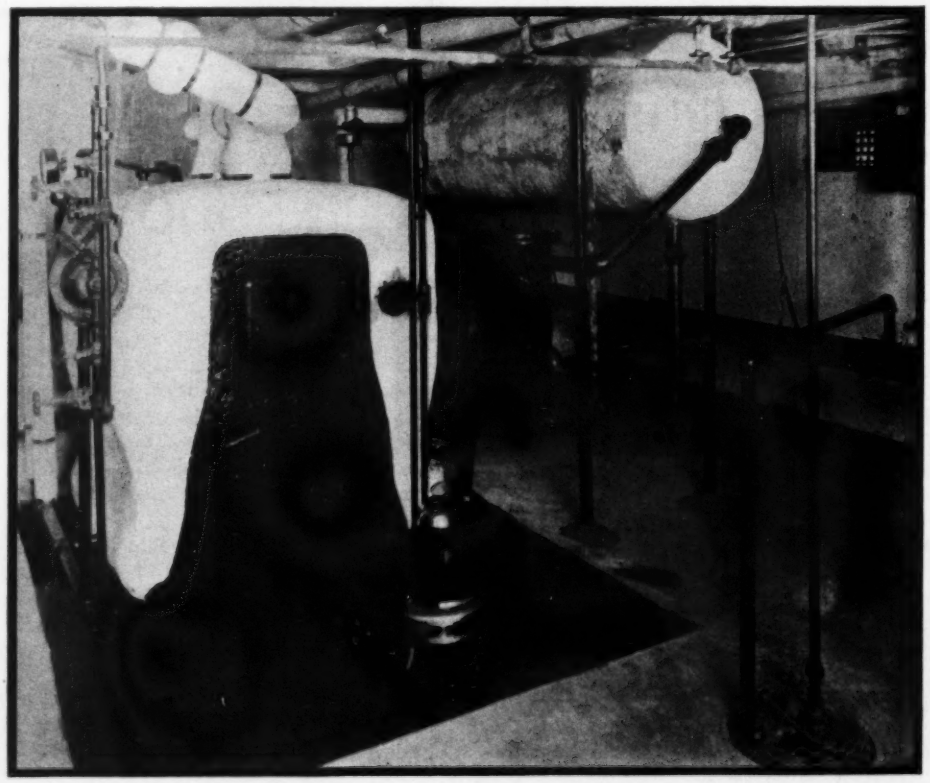
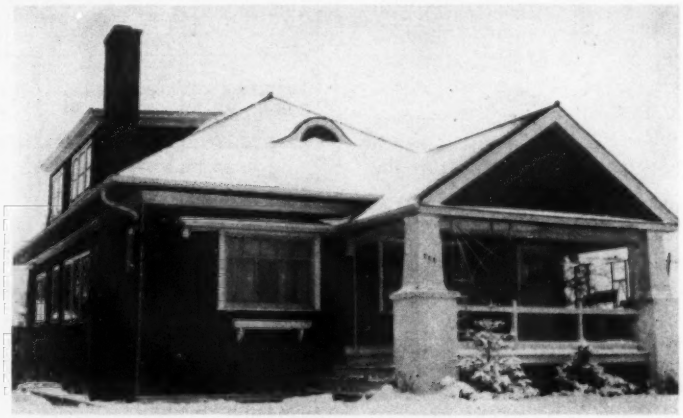


Fig. 2—This view of another "Showroom Job" indicates how the floor and equipment was painted so that new customers would be attracted

This A.S.H.V.E. Paper Indicates How It Is Possible to Adapt Air Conditioning to the Requirements of the Small Home Where Cost Is a Main Factor



Small Residence Air Conditioning

By M. K. DREWRY*

THE modification of a warm-air system for hot-water air heating, tap-water cooling, automatic fuel feed, and year-round air filtration and humidity control has afforded the experiences and data recorded herein. The eight points of greatest interest are: (1) 90 per cent average boiler efficiency, (2) $6 per summer tap-water cooling, (3) year-round coke fire, (4) 8.5 unit heat transfer rate from a 167-sq. ft. automotive-type radiator of 1 cu. ft. volume but adequate for heating and cooling 17,000 cu. ft. space, (5) 10 per cent CO_2 average from coke fire, (6) 160 F. average flue gas temperature, (7) 70 watts input for supplementary mechanical air circulation, and (8) satisfactory stoking by gravity of small-size fuel from a simple welded hopper. Total investment and annual operating costs, including cooling, were found to be no greater than those of the previous simple heating system.

Figs. 5 and 6 show the equipment which was used. On February 18, 1933, it replaced a standard warm-air furnace in a 17,000-cu. ft. residence at Milwaukee, Wis., utilizing the same air circulating system as did the original furnace (Figs. 1, 2, and 3). That this heating system is a combination warm-air and hot-water system, employing water as a heat-transfer medium between the fuel-combustion process and the air-heating procedure, is apparent. A small hot-water boiler (18 in. firepot) provides heated water to an automotive-type radiator mounted in a separate casing through which the room-air circulates. Fuel is fed into the boiler by gravity from a welded sheet metal hopper.

For moderate rates of heat output to the rooms, the air flow is induced by natural convection. When a greater heat output is required, either in cold weather or during rapid room heating, the propeller-type fan comes into service. The fan starts automatically when the water temperature at the top of the boiler approaches the boiling point.

A thermostat in

Fig. 1—The illustration at the top of this page shows the home in question in which tests were run

*Asst. Chief Engr. of Power Plants, Milwaukee Electric Railway & Light Co.

Presented at the 40th Annual Meeting of the AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS, New York, February, 1934, and reprinted from the Society's Journal.

the rooms regulates the heat output and a damper regulator located on the boiler serves to start and stop the fan and to limit the heat output of the fire from exceeding the capacity of the radiator. Thus, operation of the unit is automatic, except for filling the fuel hopper and shaking ashes once daily for the average heating demand per day.

Summer operation for cooling consists of admitting tap-water to the heat-exchanger and operating the fan continuously to supply cooled air to each room through the riser pipes and the same registers as are employed for heating. The hot-water boiler is isolated from the radiator throughout the summer by closing gate valves, and is then employed only to heat service water. Because of the low heating requirements of service water, fuel additions are made only once weekly during the summer.

THE SELECTION OF EQUIPMENT

To accomplish the main object of providing acceptable year-round automatic air conditioning without exceeding warm-air furnace costs required consideration of many combinations of equipment. Application of rapidly advancing power plant practices and principles assisted materially. Making duel or treble use of apparatus, working each piece of equipment to maximum capacity and efficiency, and utilizing standard products as much as possible, helped to attain the desired result.

Propeller fan and motor tests, combined with calculations of piping resistances deduced from circulating air temperatures with the warm-air furnace operating, disclosed that adequate circulation could be obtained with a 1/20 hp. motor using only 70 watts. The size of the humidity pan was calculated from a simple test of evaporation rate from an open, heated dish. Table 6 summarizes the principal design data for all of the major apparatus.

Early in February the hot-water boiler, casing, and radiator of the new installation were assembled near the furnace, a smoke pipe connection was provided to the chimney, and preliminary tests were made. Data showed that the unit would furnish 90,000 Btu. per hour, which was the desired output. On one occasion it was brought from cold, starting the fire with kindling wood, to 90,000 Btu. per hour, in only 23 min. This experience indicated the value of the small water storage (160 lb.) in the system. Operating experiences, with the unit serving for typical residence duty during the subsequent heating months and cooling months, were observed and recorded in detail. Enough data were collected to approximate efficiency and capacity reliably each day for two heating months. More detailed data were taken during three shorter tests to learn the chacteristics over a wide range of ratings. All test procedure followed accepted methods as far as conditions permitted. Air flow was measured with a calibrated anemometer and the thermometers were checked. Tables 1 and 2 summarize the daily data collected during March and April.

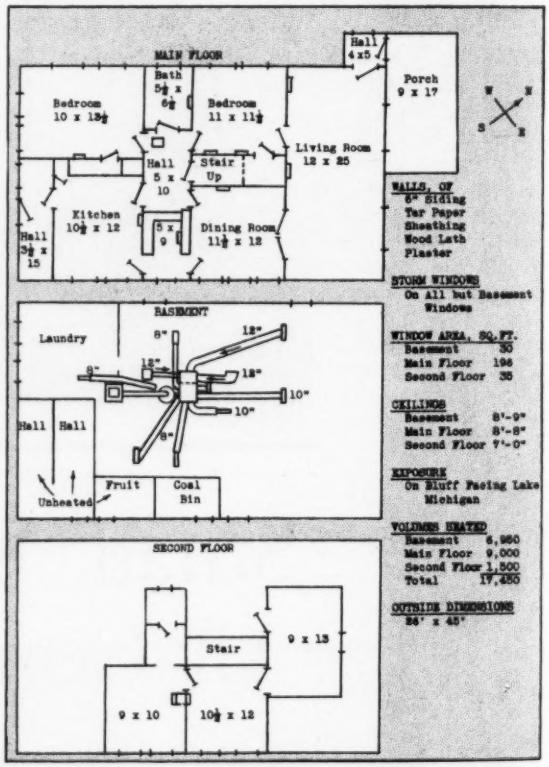


Fig. 3—A plan of the basement, first floor and attic is shown here

Room temperature regulation: A lesser vertical temperature gradient in the rooms was readily noticeable after installation of the new system; and temperatures were more uniform in horizontal planes, as well. Where 75 deg. Fahr., as registered by a centrally-located thermometer, caused discomfort with the previous installa-

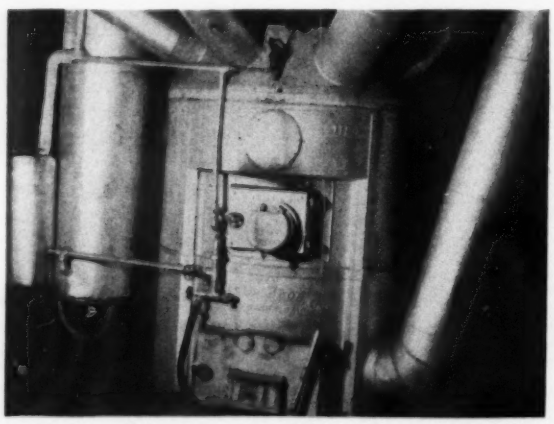


Fig. 2—This warm air heating plant was replaced by the boiler and air conditioning equipment shown in Fig. 5

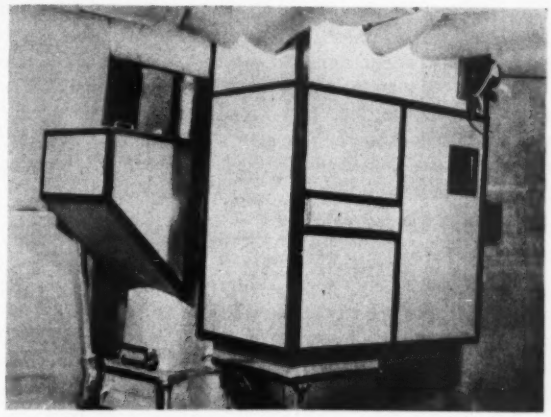


Fig. 5—The year-round air conditioning plant is illustrated at the right. It was installed in 1933

tion, the same temperature was nearly acceptable because of better vertical and horizontal uniformity of air temperature. Another proof of this uniformity is the fact that the centrally-located thermostat in an unheated hall consistently checks the fire within two or three minutes after the fan starts. Many charts were secured showing no more than 2 deg. Fahr. maximum variation of average room temperature. Air issues from the wall registers at about a 45-deg. angle when the fan operates, instead of rising almost vertically when induced by natural convection as was the case with the original furnace. The velocity is not objectionable, rather it is desirable for inducing liberal air movement.

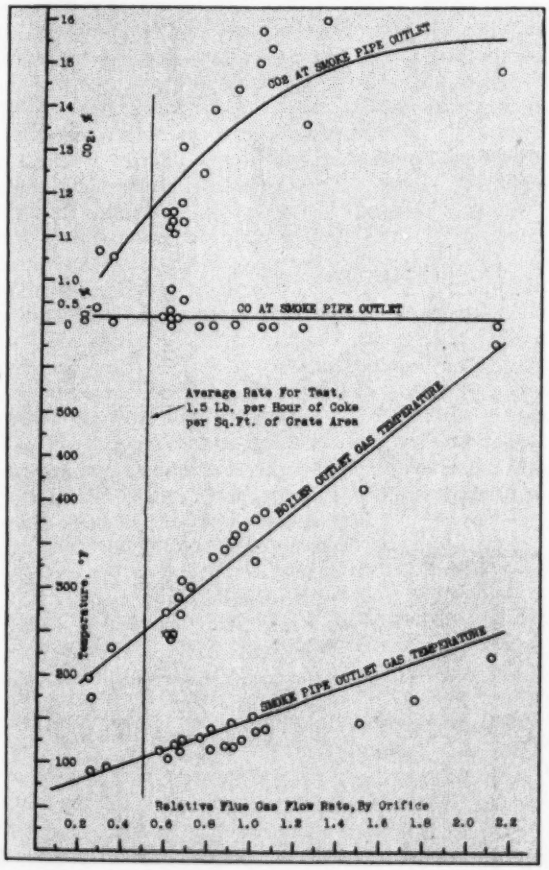

CO2 AT SMOKE PIPE OUTLET
CO AT SMOKE PIPE OUTLET
Average Rate For Test, 1.5 Lb. per Hour of Coke per Sq.Ft. of Grate Area
BOILER OUTLET GAS TEMPERATURE
SMOKE PIPE OUTLET GAS TEMPERATURE
CO2, %
CO, %
Temperature, °F
Relative Flue Gas Flow Rate, By Orifice
0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2.0 2.2

Fig. 4—Here is a chart showing the service test of the small hot water boiler

Fan noise: Though the fan and motor were quieter than average portable room ventilating fans when tested outside of the casing, their noise was not acceptable when confined in the casing and released through the tin leader pipes into the rooms. Wall-board had been used for the casing to diminish the sounds, but not until the casing was lined with ⅜ in. of hair felt was the problem acceptably solved. The sound can now be likened to that of a quiet oil burner in a warm-air furnace. Since it is of relatively low frequency, its total elimination by absorption is difficult.

Table 1—Summary of March and April Operating Data

Averages of Daily Readings

Month	March	April
Coke burned, lb.	111	73
Ashes removed, lb.	8.6	4.8
Humidity water evaporated, lb.	39	28.8
Energy used by fan, kwh.	0.66	0.3
Number of thermostat operations	26.5	20
Flue gas analysis		
CO_2	9.0	10
O_2		10.15
CO		0.20
Relative humidity in rooms, %	43	49
Outdoor temperature, degrees Fahr.	32.7	43.8

Table 2—Coke and Ash Accounting

Coke Delivery No.	1	2	3
Date first used	Feb. 21	Mar. 16	Apr. 8
Lb. coke, as fired	2,417	2,345	1,925
Moisture, per cent			
As received		21.5	10.0
Last fired		13.0	5.0
Average	17*	17.0	7.5
Lb. coke, dry	2,000	1,950	1,780
Ash			
By analysis, dry, per cent	9.5	9.5*	6.7
Refuse			
Lb. dry	202	155	121.5
Per cent combustible, dry	8.2	6.2	7.4
Ash only, lb.	185	145	113
Ash only, per cent of coke	9.25	7.4	6.3
Difference, analysis versus ash weight, % of coal weight	+0.25	+2.1	+0.4

*Assumed.

CO experiences: CO was first detected in the flue gas after the coke hopper nearly emptied on one occasion and considerable green coke was put onto the fire when re-charging the hopper. The rapid evolution of CO forced flue gas from a leak in the smoke pipe, and long bluish-white flames were observed through the cleanout doors, passing entirely through the boiler into the smoke pipe. Orsat readings taken at 5-min. intervals showed about 16 per cent CO_2 and the following percentages of CO: 5, 3, 2.6, and 3.4. In 30 min. about one per cent CO was averaged. Twelve hours later some was still detected, and the average for the 24 hours was 0.4 per cent.

This experience proved that the phenomenon of CO_2 reduction to CO occurs in a thick incandescent fuel bed. Unless air is supplied over the fire, appreciable losses occur, since one per cent CO represents about 5 per cent fuel loss. To supply over-fire air continuously is an undesirable corrective, for it can readily cause greater sensible heat loss in the flue gases than it saves in reducing CO losses. Continuous fuel feed onto a thin fuel bed is the best solution.

CONTROL OF COMBUSTION

The continuously high combustion rate during the 10-hour capacity test caused the formation of 2.6 per cent CO after 1½ hours of test. It was necessary to admit air above the fire to eliminate this loss. Since continuously high ratings are so seldom carried for periods longer than an hour, the annual loss from this cause is slight. It does indicate one limitation of combustion rate in the installation, however.

Year-round fire maintenance: Service-water heating during summer months eliminated the need of starting a fire for mild weather comfort. On two occasions, one in June and one in September, cooling and heating were needed and actually used in reverse sequence to the seasonal trend. Storage of heat in the boiler water affords an instantaneous space-heating supply. Cooling and heating operations can be alternated in a minute at any time simply by operating three valves and starting or stopping the fan. Morning "chill" can be dispelled immediately, and without causing temperature over-runs.

Smoke pipe CO_2 readings when using coke fuel for service-water heating averaged above 5 per cent, and the smoke pipe outlet appeared at room temperature to the touch. To furnish a continuous supply of service water for four individuals, at an average temperature of about 135 F., 450 lb. of coke, costing $1.50, was burned per month. The year-round hot water cost will average less than $1.00 per month, for the boiler radiation losses are rightfully charged to space heating for 8 heating months.

Humidity conditions: Though measurements showed about only 45 per cent average relative humidity a higher moisture content of room air would have been undesirable. Moisture collecting on the inside of storm windows during relatively warm weather indicated that similar wetness inside building walls might be anticipated in colder weather. Storm windows, though equipped with gaskets to make them relatively air-tight, frosted very considerably during the coldest weather. Previous experience with high humidity suggests that the present amount will cause condensation on some internal walls during zero weather. This indicates that the present equipment has adequate capacity. Tables 1 and 2 show the quantities of water evaporated per day. To accomplish this, 4.5 per cent of the fuel consumed on an average heating season day was required for evaporating the humidity water and 80 lb. of fuel was burned on the average day, and 31 lb. of water evaporated. Initial charging of the humidity pan with a small amount of chemicals prevented scale formation and corrosion.

A HOT WEATHER SEASON

Occurrence of 101 deg. Fahr. weather in June emphasized the comforts of residence cooling. Absence of awnings and tree shade, and continuance of the warm period for several days, afforded an adequate test of the cooling cycle. Early-morning room temperatures of 78 deg. Fahr. rose to 81 deg. Fahr. by evening when waterflow was not allowed to exceed 1,000 lb. per hour (0.9c per hour). Later experience proved that greater water flow improved the radiator performance more than expected, and 79 deg. Fahr. room temperature was later maintained positively constant on a bright 95 deg. Fahr. (maximum) day with 60 deg. Fahr. inlet water. The outside temperatures cited are those of the local weather bureau. Occupancy consisted of two adults and two children. A cooling capacity of 12,000 Btu. per hour was proved to be as adequate as a 75,000 Btu. per hour heating capacity. This experience indicated that cooling calculations for the residence concerned can be made with the same heat-per-degree-Fahrenheit as employed for heating, and that 10 deg. Fahr. average cooling is an adequate allowance. Table 4 shows typical cooling data for two days in June.

An effective temperature of 75.5 was maintained as a daily average throughout the summer with tap water from 50 deg. Fahr. to 60 deg. Fahr. The A. S. H. V. E.

(Continued on Page 98)

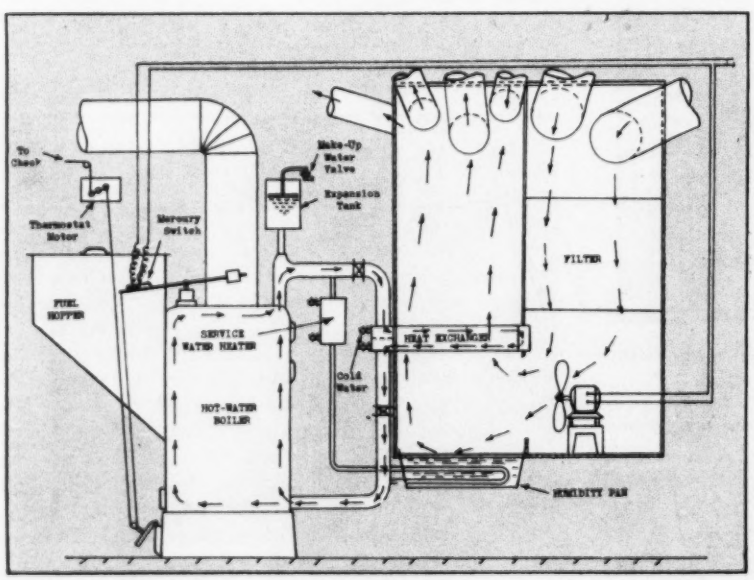


Fig. 6—Here is a diagram of the combination air conditioning equipment which was designed for both summer and winter service

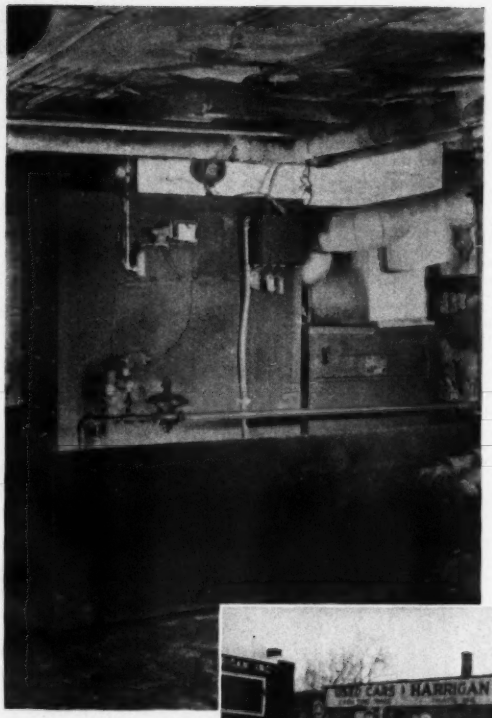


Fig. 1—The illustration at the left shows a gas fired air conditioning unit installed in the basement of the building shown below. This unit only serves the second floor living quarters. Fig. 2—Below, indicates the exposure and type of building which had to be considered in figuring the requirements of the plant

This Installation is Gas Fired

Air Conditioning Unit Protected from Water

HERE is a gas-fired conditioning installation which was sold, laid-out and installed by a progressive heating contractor who serves one of the suburban districts in the Chicago area. It is characterized by several interesting features. In the first place, the owner only wanted to air condition his living quarters located on the second floor of the building shown in Fig. 2. Normally, this space is heated by the same plant which heats the line of buildings here illustrated. In addition, it heats a large garage and service station which is in connection. On other than business days, when the main heating plant is closed down, the owner specified that the air conditioning plant should take the full load of heating his apartment. With the main heating plant operating, the only need was for humidifying, circulating and cleaning.

Another feature of this installation is it has been designed with the knowledge that at times the basement

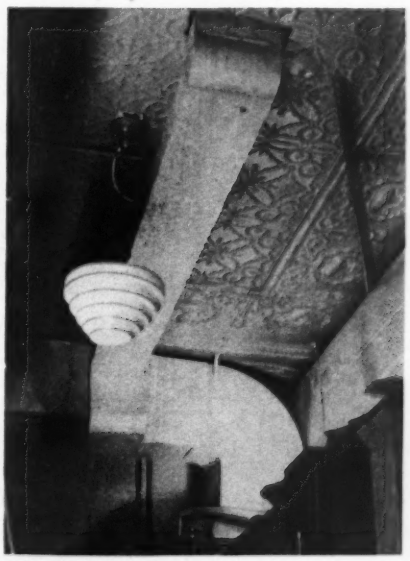


Fig. 3—The duct work for the air conditioning of the second floor is shown here. Note that it is run exposed on the first floor ceiling

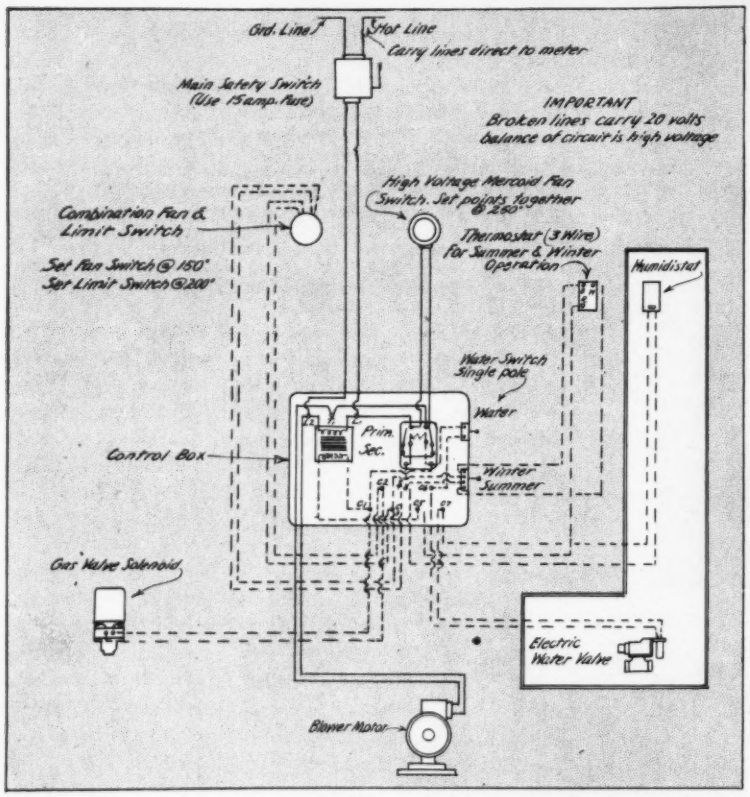


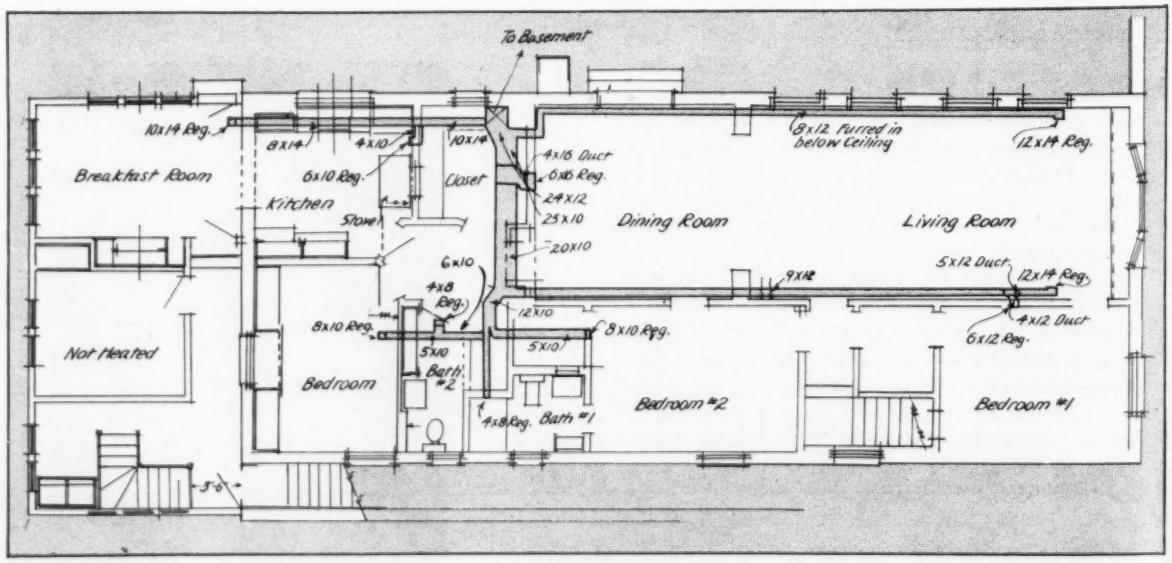
Fig. 4—Here is the control diagram for the air conditioning equipment shown in Fig. 1. When the switch on the center panel is in the winter position, the thermostat controls the fan and the gas. When the switch is in the summer position, the thermostat controls the fan only

becomes flooded. There is a sump pump installed to handle flood water. However, the idea was to prevent even the most remote possibility of water reaching the air conditioning equipment in the event of an exceptional flood being too large for the installed pump to handle it. The safeguarding provisions are shown in Fig. 1. The entire air conditioning unit was placed in a water tight box made of plates welded together. At the lower front corner is a screw plug for discharging any water which may collect in the box.

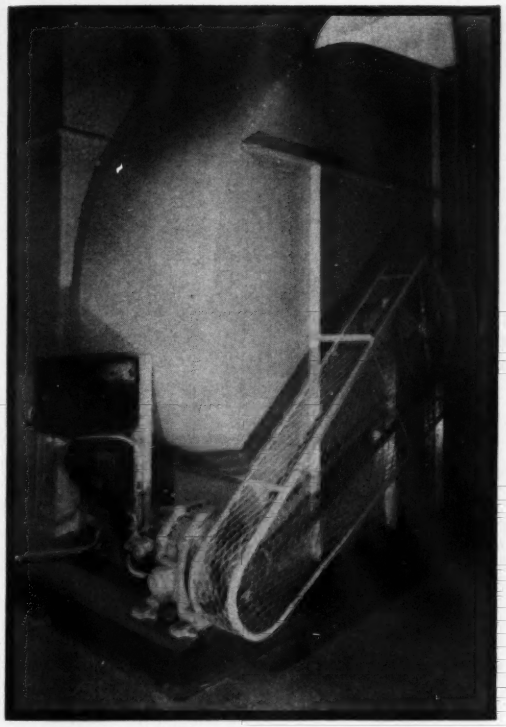
The illustration marked Fig. 3 illustrates the nature of the duct installation. The leader running through the center of the picture is a branch off of the main rising from the air conditioning unit in the basement, in a corner of a rear first floor room. Notice that because of the commercial nature of the first floor, there was no objection to running the ducts exposed on the ceiling. However, the ducts were well made, neatly installed and finally painted with the result that they are not unsightly.

The layout of the living quarters which are air conditioned is shown in Fig. 5. The corner shown in Fig. 3 is underneath the point on the upper center of the plan where the arrow labeled "To Basement" is seen. As already indicated, directly below this, in the basement is the air conditioning unit shown in Fig. 1. The sizing of the ducts, the splitting of the branches, the location of the conditioned air outlets and their sizes, all are indicated on the plan. Because of the complication which would have resulted,

(Continued on page 86)



Fif. 5—Above: Plan of the second floor showing the supply ducts, the registers and their sizes as they were laid out. Return registers are indicated



The application of electricity to air conditioning is clearly indicated in the illustration at the left. Here the electric motor supplies the driving force for blower equipment

Electricity Facts

Motors Are Considered in This Second Article

What the air conditioning dealer and engineer should know about electricity and, especially, electric motors is told by R. C. Allen.* This is a subject of increasing interest and importance in this new work

HAVING determined what electricity is, how it acts, and how it is measured, let us now consider what use can be made of it. When properly applied electricity is one of the most flexible and satisfactory means of obtaining light and power. By means of wires, buttons, and control switches, lights can be turned on or a motor started at some distant point even many miles away from the operator. Also by automatic control a motor can be made to start and stop as required without any operator being present.

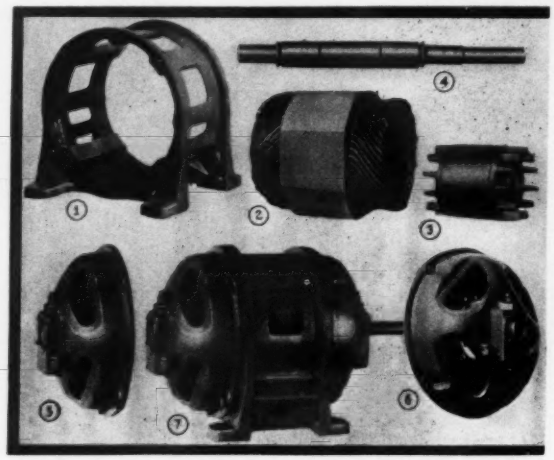
In the olden days a motor was—just a motor—for running a lineshaft or similar load and the controller a simple starting switch. Today motors are more frequently driving individual loads and it is necessary to select the correct motor for that particular drive. This requires a knowledge of not only the motor and control characteristics, but also of the driven load requirements to be sure of correct selections and continuous satisfactory operation.

Motors consist of a stator and a rotor mounted together but with only a small space or air gap between the two. Fig. 1. On each there is an electric winding or circuit. The mechanical and electrical arrangements differ with the various types of motors, such as squirrel cage, wound rotor, single phase, and direct current motors, but when connected to the electric power the magnetic action of the electric windings on each other are such as to produce a turning force in the rotor.

What actually makes the motor rotate is a long and involved explanation. Suffice it to say however that the windings are so arranged that there are essentially a set of electric magnets on the stator and another on the rotor. One set revolves electrically, due to the winding arrangement, and pulls the other by attraction; thus providing the turning force of the motor.

The force between these two sets of electric magnets is the same as between two horse shoe magnets so familiar to us all. If placed near each other and one revolved, it will pull the other around also due to the magnetic attraction. If restrained, as by the finger, the one will

*General Engineer, Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa.



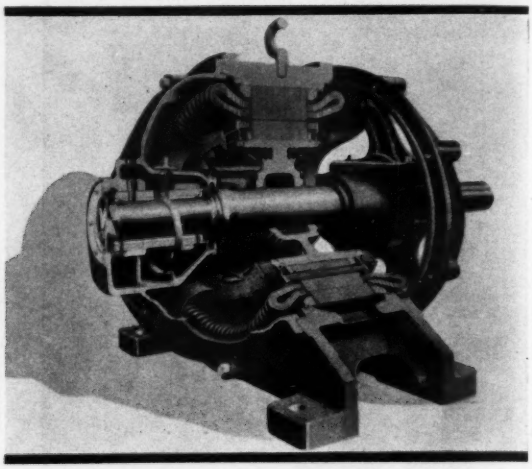


Fig. 1—Above is a squirrel cage motor with its separate parts. Fig. 2—At the right is a cut-away of a squirrel cage motor showing the relationship of the various parts

lag behind the other. This corresponds to the carrying of the load. If the "load" is gradually increased there will be a greater and greater lag until the magnetic hold is broken entirely. This condition corresponds to a motor pulling out of step.

The motor therefore transforms the electrical current or power input into mechanical power output in the form of a turning force, called *torque,* at the shaft. This torque is expressed in foot lbs. measured at 1 foot radius and is generally measured by a Prony brake. The torque times distance (circumference of 1 ft. radius times rpm.) is the work done and this work divided by 33,000 ft. lbs. (the value of 1 hp.) gives the horsepower output of the motor.

$$\text{Horsepower (output)} = \frac{\text{Torque} \times 2 \times 3.1416 \times \text{Rpm.}}{33{,}000}$$

$$\text{or H. P.} = \frac{\text{T} \times \text{Rpm.}}{5252}$$

The input to the motor is measured in watts or kilowatts.

All of the power going to the motor, and measured by the wattmeter, does not leave it as useful work or horsepower. The difference is due to the losses in the motor.

The ratio of the output to the input is the motor efficiency.

$$\text{Efficiency} = \frac{\text{Output}}{\text{Input}} = \frac{\text{Input minus losses}}{\text{Input}}$$

or

$$\text{Output} = \text{Input} \times \text{Efficiency}$$

The internal losses show up as heat and, to keep the losses sufficiently low to prevent excessive heat in the windings, is one of the design problems.

The input and output can be calculated from the voltmeter and ammeter readings.

For direct current motors

$$\text{Kilowatt (input)} = \frac{\text{Volts} \times \text{Amperes}}{1000}$$

$$\text{Horsepower (output)} = \frac{\text{Volts} \times \text{Amperes} \times \text{Efficiency}}{746}$$

With alternating current motors the power factor of the motor must be included also.

For A. C. motors

$$\text{Kilowatt (input)} = \frac{\text{V} \times \text{A} \times \text{P. F.}}{1000}$$

$$\text{Horsepower (output)} = \frac{\text{V} \times \text{A} \times \text{P. F.} \times \text{Eff.}}{746}$$

$$\text{or} = \frac{\text{Kw.} \times \text{Eff.}}{.746}$$

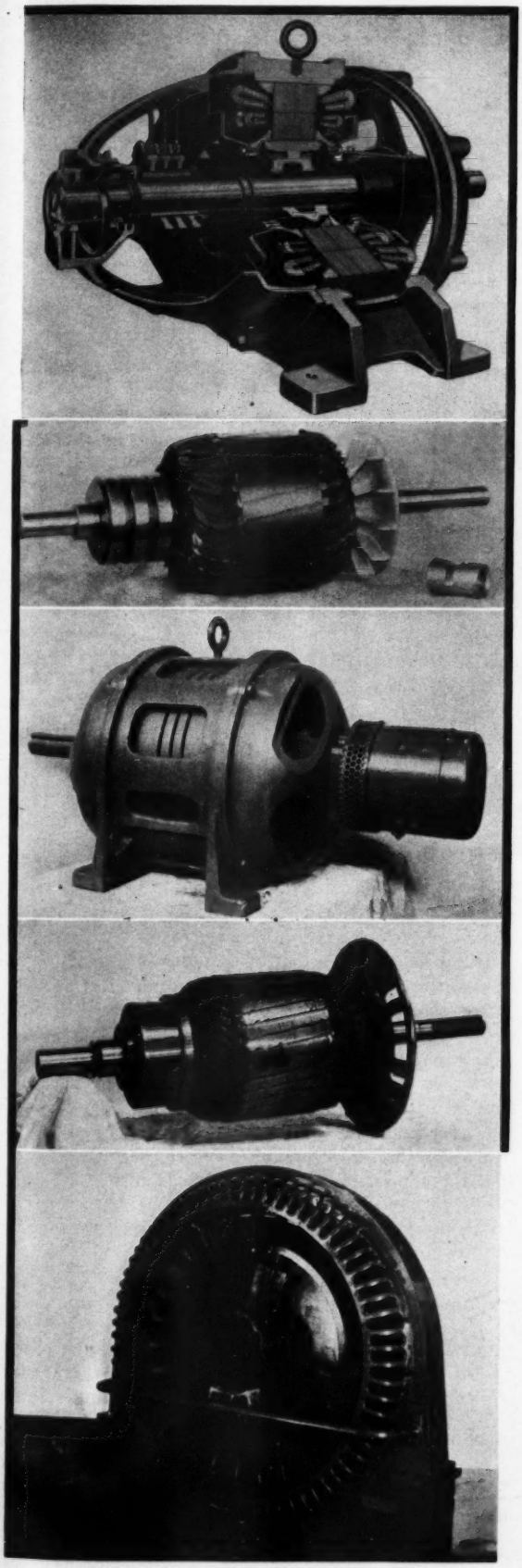
The power factor and efficiency of a motor can be obtained from the published performance of that particular motor. If this is not available the power factor can be determined by the ratio of the kilowatt to the kilovolt ampere inputs to the motor.

$$\text{P. F.} = \frac{\text{Kw.}}{\text{Kv-a.}}$$

Kv-a. is the kilovolt amperes and equals the volts times amperes times (for 3 phase current) 1.73 divided by 1000.

A motor of 1150 rpm. or 1750 rpm., 3 phase, 5 hp. squirrel cage type has about 88 per cent efficiency and 85 per cent power factor and a 15 hp. motor of similar speeds 89 per cent efficiency and 90 per cent power factor with even better values for larger motors. Low speed motors have inherently lower efficiency and even lower power factor. Motors carrying light loads (less than half their rated capacity) also have lower efficiencies and power factors.

The current taken from the line by any induction motor always has a lagging power factor. It is made up of two elements, one working with the voltage, called a watt or power current and the other without the voltage (out of phase) called wattless. This latter is required to establish the magnetic field in the motor and is known as the magnetizing current.



Feeder and power lines, as well as generators, are limited in their capacity to carry current economically due to line drop and heating. If these are therefore loaded up with wattless current they cannot at the same time be carrying their normal capacity in the watt or power current that produces horsepower.

Since the current for the magnetic field of a motor partially loaded is essentially the same as for a fully loaded motor it is evident that the current going to the motor at light loads has a very low power factor. All motors should be selected to operate as near full load as possible in order to raise the power factor of the plant and prevent overloading the power lines with wattless current.

The possible speeds for an alternating current motor are quite limited. It depends upon the number of poles wound into the stator winding and the frequency of the current as follows:

$$\text{Rpm. (synchronous speed)} = \frac{120 \times \text{Cycles}}{\text{No. of poles}}$$

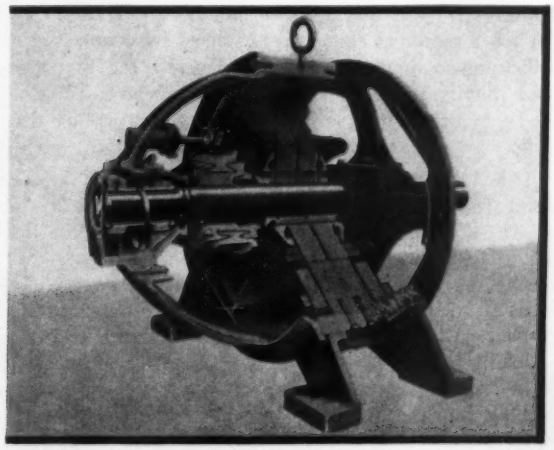
The full load speed is slightly less than the above due to the slip required for induction motors. This relationship is as follows:

	Revolutions per Minute for Motors			
	60 Cycles		25 Cycles	
Poles	Synchronous Rpm.	Full Load Rpm.	Synchronous Rpm.	Full Load Rpm.
2	3600	3540	1500	1450
4	1800	1750	750	720
6	1200	1160	500	480
8	900	870		
10	720	695		
12	600	580		

Types of Motors:

There are various types of motors and many modifications of each to meet the requirements of different ap-

Fig. 3—The illustration at the top of this page shows a wound rotor motor cut away. Fig. 4—Second from the top; Rotor of a small wound rotor motor. Fig. 5—Third; High speed synchronous motor with a direct connected exciter which supplies the D. C. current to the motor rotor poles. Fig. 6—Fourth; Rotor of a single phase motor of the repulsion-induction type. Fig. 7—Bottom; Synchronous motor of the engine type used for driving low speed reciprocating compressors. Fig. 8—Below; Direct current compound wound motor



plications or drives. The most important types are:

A. C. Motors	D. C. Motors
Squirrel cage	Shunt wound
Wound rotor	Serieswound
Single phase	Compound wound
Synchronous	

Squirrel Cage Motors:

Of the different types of motors the squirrel cage induction motor is the most popular. Fig. 1. It consists of a primary or phase winding on the stator and a squirrel cage winding or secondary on the rotor. The electrical action is such that as the load increases there is a slight drop in the rotor speed, called "*slip*." The greater the load the greater the slip. If the load should increase too much the motor would "pull out of step" and stall. This however is generally between 2 and 3 times the full load torque and is seldom an operating condition.

Squirrel cage motors are designed with the various starting torque, pull out torque, and starting current characteristics such as required by the different types of drives. These are:

Starting torque which is developed at the instant voltage is applied to the motor. The actual value varies greatly depending upon the motor speed and design.

Full load torque. The rated continuous torque the motor will carry without exceeding the guaranteed temperature rise.

Pull-out torque—The maximum load torque the motor will carry momentarily without pulling out of step.

Accelerating torque—The torque developed while the motor is accelerating from rest to full speed. Unless this torque is greater than the load torque the unit will not accelerate beyond the speed at which the two are equal.

When a motor at standstill is started by connecting it to the power line, the current taken by the motor is called *starting current.* As the motor accelerates to full speed the current gradually reduces until it becomes that required to carry the existing load. As the load changes the current changes.

Squirrel cage motors are generally designed to be started full voltage, that is thrown directly onto the line voltage by the starter. Where desired or necessary both starting current and starting torque can be reduced by means of a reduced motor starter. Enough current must however be taken to give the torque necessary to carry the load.

The starting characteristics of squirrel cage motors are built into the motor and are not as readily changed as in some other types. For that reason there are many types to meet the requirements of the different driven units. The more important of these are:

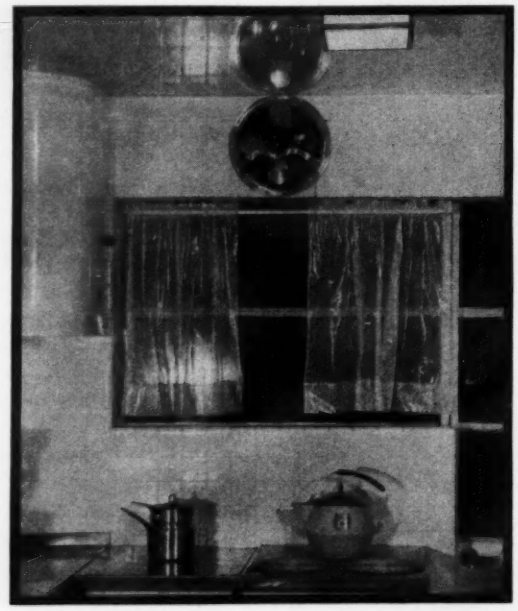
General Purpose Motors—for general drives such as line shafts, etc. and even fans and centrifugal pumps where the normal starting torque is ample and the starting current is not an important consideration.

Low-current—normal torque motors—designed particularly for full voltage starting with low starting current and with torques required for fans, centrifugal pumps, and similar drives having normal starting torques.

Low current—high starting torque motors—similar to the above except with higher starting torques as required for compressors started loaded and similar drives having high starting torques. These are sometimes called "double deck" motors because of the appearance of the squirrel cage winding.

Elevator type motors—with extra high starting torques and low current inrush. These are secured by a high slip at full load resulting in a relatively low efficiency but for intermittent operation this is not objectionable.

Speed adjustment of these motors is not practical except as it is possible to wind with two, three or four speeds on one frame.



Here is another application of electricity and a motor—in the form of a kitchen ventilating fan

The wound rotor or slip ring motor is similar in construction and characteristics to the squirrel cage motor except that the secondary or rotor winding is phase wound similarly to the primary. Fig. 3. The ends of this winding are brought out through slip rings and brushes to the controller where, by means of resistance inserted in the circuit, the motor torque characteristics can be changed readily within certain limits. What really happens is that by increasing the secondary resistance the slip is increased for the load torque. By this means the speed, and consequently the output of the driven unit, such as the pump or fan, can be changed at will from one speed to another.

Torque is defined as that which produces or tends to produce rotation or torsion. In effect it consists of a couple (of forces). Specifically, it is the product of a tangential force multiplied by the radius of the part it rotates which is known as the moment of tangential effort. A couple here is a pair of equal parallel forces acting in opposite directions but not on the same point. Their tendency is to produce rotation.

In the same way the torque at the instant of starting (starting torque) can be made any desired value (but never greater than the pull-out torque) by selecting the

(Continued on Page 102)

TEAMWORK

...we need each other!

A tandem can pass an ordinary bicycle in a cloud of dust. Two men working effectively together can outstrip one.

That's why Dole, to make this a profitable year for you, is helping you with the pedaling. We set out to make it easier for you to sell by telling the sales story of Dole Valves over 100,000 times to your best prospects. We've kept at it and both steamfitters and jobbers have felt the good results.

Keep pushing. Wind up this season with a burst of speed—and the biggest air valve profit you ever had.

DOLE

SYPHON AIR AND VACUUM VALVES

You know these two leading Dole Valves—the No. 1 and the Popular No. 20. Team up with them for customer satisfaction.

OVER →

TOGETHER WE CAN DEVELOP A STRONGER SALES

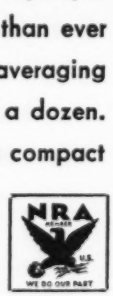
PUSH

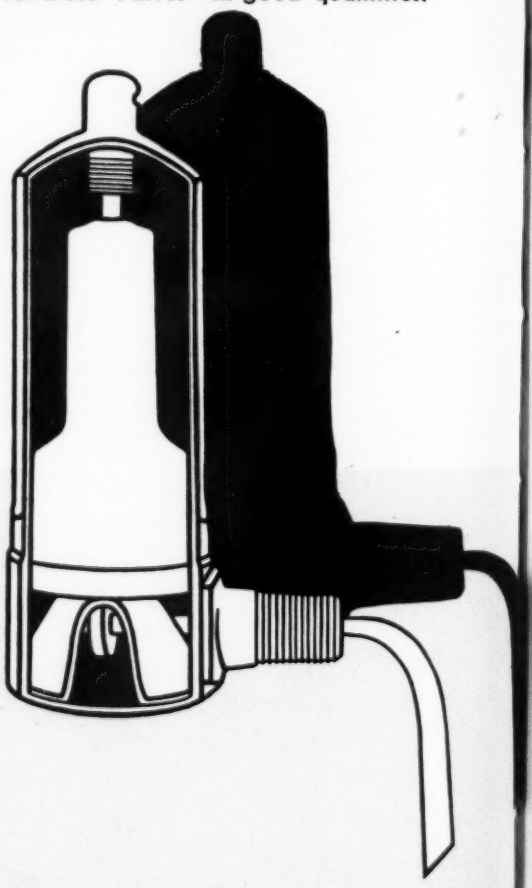
There is plenty of the 1934 heating season left to cash in on the promotional work Dole has done for you.

Our presentation of the facts about the comfort and economy of Dole Valves has been made by full page advertisements in such magazines as National Real Estate Journal, Hospital Topics & Buyer, Building Maintenance and Hotel Monthly. It has been read by thousands of engineers, superintendents and building operators of apartments, public buildings, hotels, hospitals, office buildings and factories—the best of prospects for Dole Valves—in good quantities.

More profits are being made this year than ever before by many steamfitters, simply by averaging half a gross to the order instead of half a dozen.

Jobbers!—Keep up your stock on this compact fast moving line—the line with the tandem push behind it. Steamfitters!—Do the same and keep pushing.





There is no secret about the excellent construction of the Dole Syphon Air Valve No. 1. This cut-away view tells the inside story of long trouble-free service, assured by good design and rigid standards of quality in both workmanship and material.

Dole

THE DOLE VALVE COMPANY
1913-33 Carroll Avenue, Chicago, Illinois

←OVER

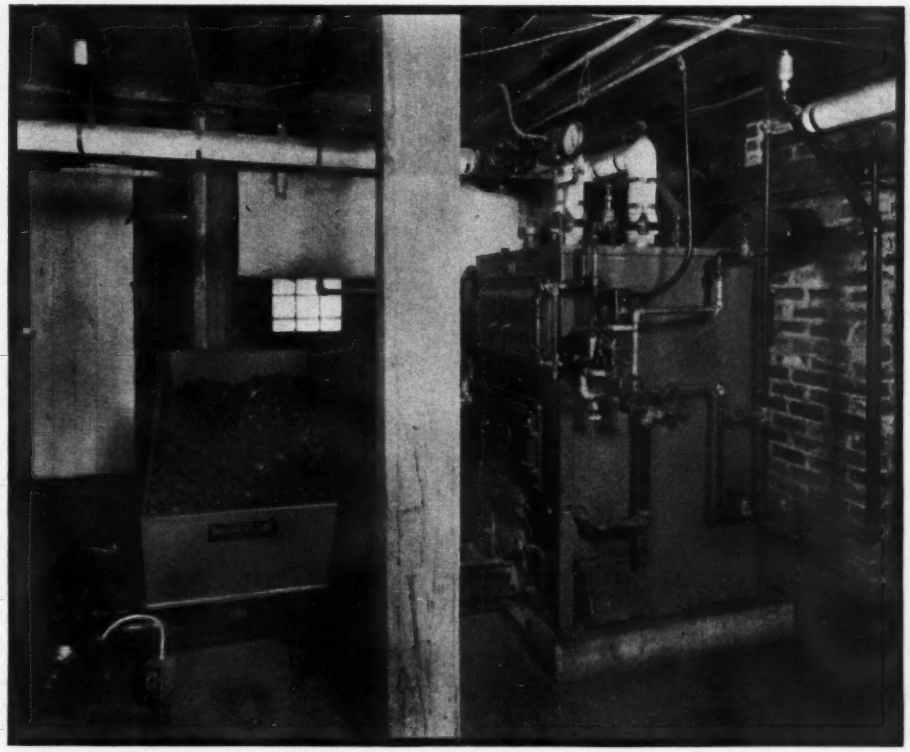


Fig. 1—This photograph shows a heating plant in a small four-unit apartment building

Owners of Stokers Are His Best Sales Prospects

"The stoker is an excellent entering wedge for the sale of accessory heating equipment. We have more than doubled our sale of water feeders, since we started selling stokers. The summer hot water supply system works in well too."

RECENTLY we had the opportunity of talking to the president of one of the large domestic stoker companies about his dealers and he made this statement:

"Yes, our dealership organization includes a wide range of the business world. Some are electrical contractors, coal dealers, building material people and others —but whenever we can, we like to place our franchise with a reliable Heating Contractor." We agreed with him, but were interested to see his point. "It allows us to concentrate with our dealer from the very first on *sales* instead of wasting a long period on teaching him the fine points of heating practice."

Thus he compressed in a nutshell what we have discovered through several years of handling stokers, namely, that the problem of the heating contractor in this field is a sales problem—a merchandising problem. It is not necessary to learn a whole new business—only a wider application of his present one. The question the contractor asks of himself when about to take on a line of stokers is not "Can I install and service this stoker satisfactorily?" but rather, "Will I sell enough stokers this year to pay for handling them?"

Our experience, which includes along with it a great many mistakes and blunders, too, may be of help to con-

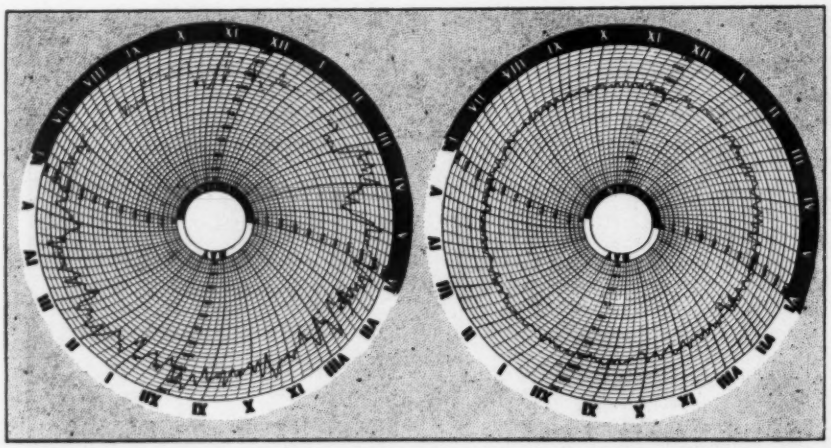


Fig. 2—"We like to stress uniform temperature in a sales talk." The charts at the left show respectively pressures in an apartment house before and after a stoker installation. Pressure variations were changed from 45 lb. to from 22 to 15 lb.

tractors who are just entering or thinking of entering the stoker game.

There is, first of all, the prospect. He must be dug up in this as in other lines of business. By advertising, for instance. We use newspaper advertising to some extent, but find that its chief value lies in promoting general good will, making the product locally known and talked-of rather than in developing immediate, individual customers.

Direct-by-mail advertising is very helpful and it has given us good results. It can accomplish several purposes, one of the most important of which is in the way it opens up a prospect for an audience when the salesman makes his call. Nothing is more discouraging than to walk in on a prospect and "cold canvass" him: to find him totally unfamiliar with your product or your firm. We have found the direct-by-mail letter, especially in the form of campaign literature mailed at intervals of a week apart, is one of the best ways to open up for the salesman's interview.

The direct-by-mail letter also actually has drawn customers into our showroom. One corporation advertising man recently remarked that the national and local newspaper advertising is like the discharge of a shotgun that covers a wide area and finds many marks. It is highly effective and can be made much more so by supplementing with the direct-by-mail letter, which can be compared to the shot of a rifle that goes straight to the target.

All advertising of this kind, we believe, should center around the show-room and the effort to bring the prospect to a demonstration of the stoker. For this purpose we keep a machine in operating condition on our floor at all times. The thermostat and auxiliary controls are neatly arranged on a small panel that sets them off attractively and makes the operation of the stoker more realistic and graphic. We find that we have to continually guard against the temptation to take the prospect through a demonstration too fast. He is intensely interested in small details and the salesman's familiarity with them often lets them escape description. We always remember that while a stoker's features may seem simple and "old stuff" to us, to our prospect they are as new as tomorrow morning's paper. The automatic stoker is a mechanical device and the average prospect is just a little proud of being able to understand it.

We like to stress uniform temperature in a sales talk, for after all that is one of the biggest advantages the stoker brings. Yet it seems to be one of the hardest

(Concluded on Page 90)

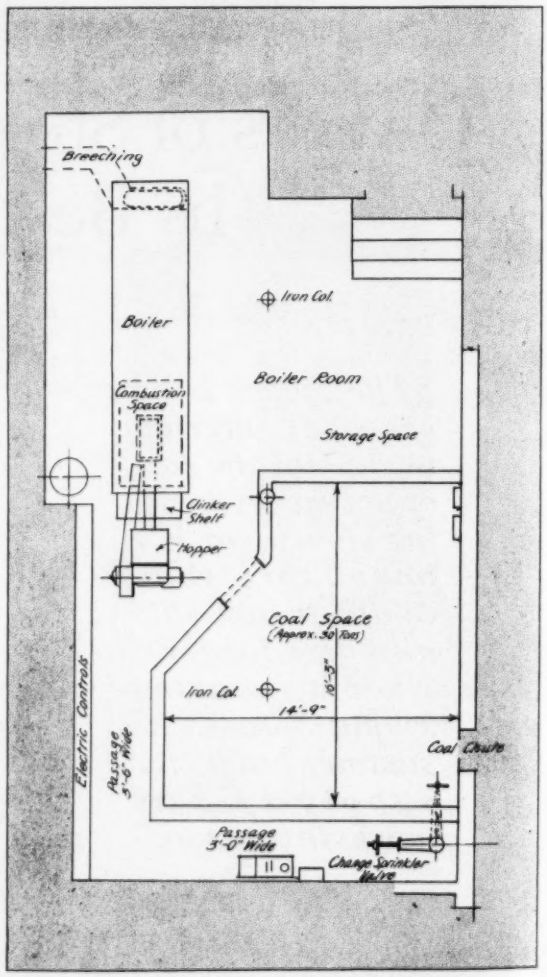
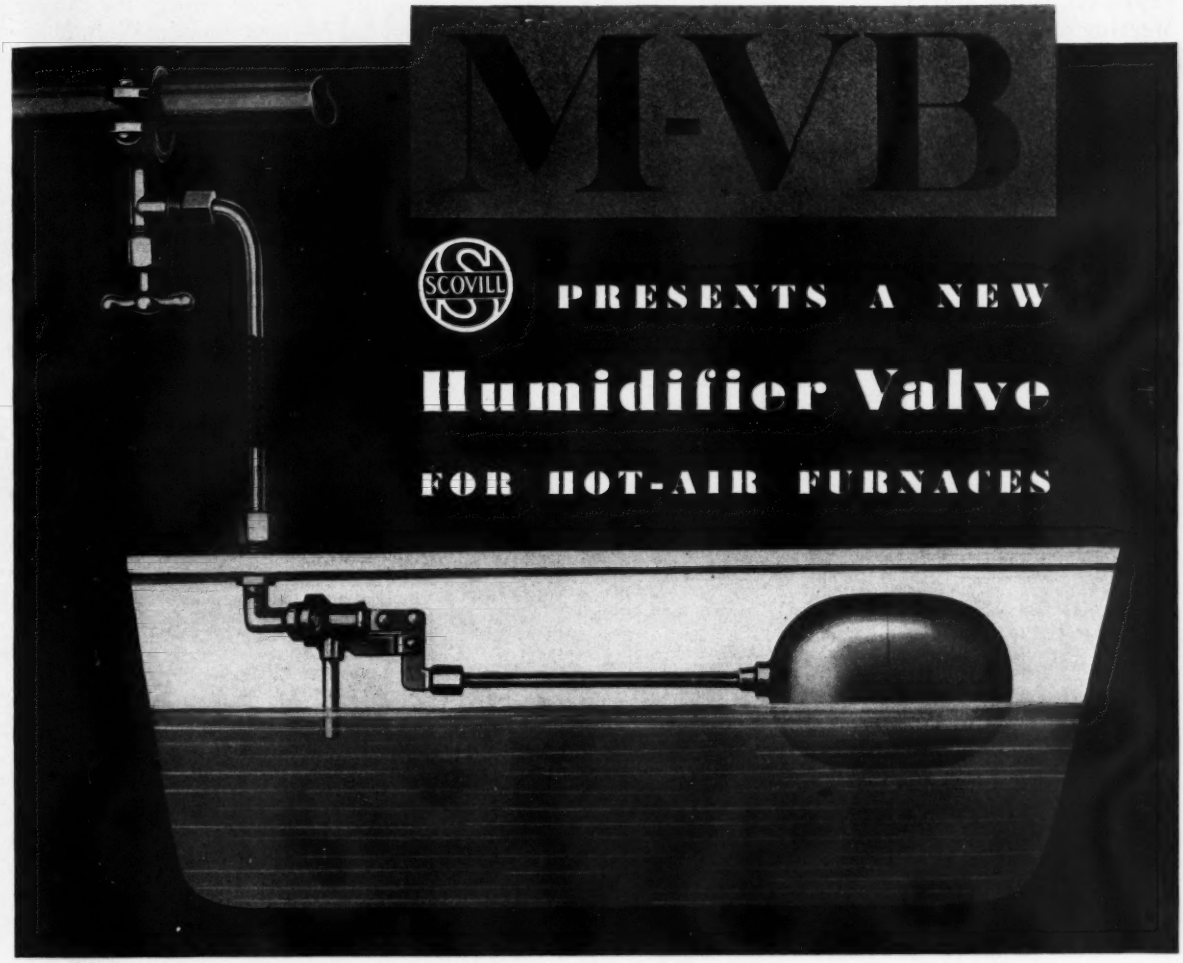


Fig. 3—"Objections frequently can be overcome by drawing up a neat sketch of the way the job will look when finished. This drawing was made for a local printing company and was a big factor in closing the sale."



ADVANCE news to jobbers about a brand-new product. . . . Time to stock it now for the spring furnace-cleaning season. . . . This M-VB Automatic-Float Humidifier Valve belongs on every hot-air furnace that has a hand-operated valve or no valve at all. Get these selling points:

Construction. . . . The valve is mounted right on the cover of the water pan. (See illustration.) All moving parts are clear of the water, can't corrode and stick. The valve-plunger is chromium-plated, seating against a special washer that resists heat and live steam.

Installation. . . . Installed in half an hour even while the furnace is going. To mount the float valve—just drill three holes in the water-pan cover. To mount the strap valve—one hole in a convenient pipe line. The two valves are connected by ¼-inch copper tubing (10 feet furnished with each unit). All packed in a neat box, with complete directions on the lid.

This new product has M-VB design, materials, workmanship throughout. In short, M-VB *quality*. Jobbers, send in the coupon below for a free descriptive folder and full details. No obligation whatever. Do it now.

MORENCY-VAN BUREN DIVISION
Scovill Manufacturing Company
STURGIS MICHIGAN

MORENCY-VAN BUREN MANUFACTURING DIV.
Sturgis, Michigan

Please send me free descriptive folder on your Automatic-Float Humidifier Valve. I assume no obligation.

*Name*_____ *Firm*_____

*Address*_____

*City and State*_____

Crane Co. Holds Mass Meeting of Dealers

One hundred plumbing and heating contractors attended a mass meeting on Friday evening, January 12, at the Long Island City, N. Y., branch of Crane Co. Among the master plumbers in attendance were: H. H. Halloran, vice-president of Manhattan Association; M. J. Hayden, vice-president of Brooklyn, and P. M. Scott, treasurer of the Rockaways Association.

P. R. Mork, vice-president of Crane Co., stated that his company had brought out a new oil burner boiler unit, which would be distributed through the plumbing and heating trade; and Assistant Manager W. B. Morris, also of Crane Co., explained that as the Williams Oil-O-Matic burner would be used in Crane Co.'s new boiler unit, Williams distributors would handle the installation of the burner, the permits, and the service.

Among the other speakers were: H. W. Kuhlman of Crane Co., C. Muirhead of the Williams Oil-O-Matic Heating Corp., A. J. De Vere of the Hamilton Utilities Corporation, and Mr. Taylor of the New York Oil Burner Co.

Exhibitors at the Heating and Ventilating Show

Grand Central Palace, New York City, February 5 to 9

Booths	Exhibitors
125	Aerofin Corporation.
97	Aerologist, The
49	Air Conditioning Industries, Inc.
10	Air Controls, Inc.
129	Allis-Chalmers Mfg. Co.
138	American Artisan
45	American Brass Co., The
9	American Gas Association, Inc.
36	American Gas Products Corp.
36-37-38-40-41	American Radiator Company
56	American Society Heating & Ventilating Engineers
5	Anderson Manufacturing Co.
72	Armstrong Machine Works
103	Automatic Products Co.
19-20	Barber-Colman Company
122	Baker Ice Machine Company, Inc.
67	Barnes & Jones, Inc.
78	Bell & Gossett Co.
101	Blom-Gamarra Humidifier
12	Breuer Electric Mfg. Co.
117	Bristol Company, The
9	Brooklyn Borough Gas Company
9	Brooklyn Union Gas Company
34-35	Bryant Heater Co., The
28-29	Burnham Boiler Corporation
30	Caloroil Burner Corporation
37	Campbell Metal Window Corp.
124	Carrier Engineering Corp.
76	Century Electric Co.
85-86	Century Engineering Corporation
75	Chace Valve Co., W. M.
55	Chase Brass & Copper Co., Inc.
10	Cleveland Heater Co.
126	Comfortaire Company
9	Consolidated Gas Company of N. Y.
81	Coppus Engineering Corp.
51	Crane Co.
38	Detroit Lubricator Co.
77	Dole Valve Co., The
115-116	Domestic Engineering Co.
21	Eagle-Picher Lead Co., The
89	Economy Pumping Machinery Co.
98	Emerson Electric Mfg. Co., The
40	Excelso Products Corp.
26	Fairbanks Company, The
107	Fairfield Oil Heating Co., Inc.
59	Fitzgibbons Boiler Co.
36 and 41	Fox Furnace Co.
133–134	Frick Company
74	Friez & Sons, Inc., Julien P.
32–33	Frigidaire Corporation
141–142	Fuel Oil Journal
69	General Electric Company (Air-Conditioning Div.)
111	General Electric Company (Oil Burner Div.)
23	General Gas Light Company
100	Hart & Cooley Manufacturing Co.
137	Heating Journals, Inc.
138	Heating, Piping & Air Conditioning
71	Heating & Ventilating
97	Hill Co., E. Vernon
126	Hinrichsen, Inc., A. F.
89	Hoffman Specialty Co., The
132	Holtzer-Cabot Electric Co., The
87	Hotstream Co., The
91	Independent Register & Mfg. Co.
3–4	Iron Fireman Mfg. Co.
16	Jenkins Bros.
62	Jones & Laughlin Steel Corp.
101	Kainer & Co.
88	Kelly, Inc., John G.
41	Kewanee Boiler Corp.
118	Knickerbocker Ice Company
6	Koven & Brothers, Inc., L. O.
136	Liquidometer Corp., The
139	McDonnell & Miller
114	Malleable Iron Fittings Co.
58	May Oil Burner Corp.
64	Mercoid Corporation, The
65–66	Minneapolis-Honeywell Regulator Co.
24	Modine Mfg. Co.
135	Monarch Manufacturing Works, Inc.
5	Moore Valve Corp., J. W.
121	Motometer Gauge & Equip. Corp.
61	Motorstokor Corporation
25	Mueller Furnace Co., L. J.
9	New York & Richmond Gas Co.
11	Nu-Type Submerged Water Heater Corp.
127–128	Niagara Blower Co.
137	Oil Heat
110	Orr & Sembower, Inc.
43	Owens-Illinois Glass Co.
130	Parker Appliance Co., The
48	Penn Electric Switch Co.
112	Petroleum Heat & Power Co.
47	Plumbing & Heating Trade Journal
57	Republic Steel Corp.
18	Reynolds Metals, Inc.
99	Rhoads & Sons, J. E.
52	Richardson & Boynton Co.
15	Richmond Radiator Co.
8	Russell & Co., Inc., W. A.
131	Sarco Co., Inc.
46	Scott-Newcomb, Inc.
30	Silent Glow Oil Burner Corp., The
73	Skidmore Corporation
50	Spencer Heater Company
57	Steel & Tubes, Inc.
80	Strang Air Conditioning Corp.
113	Taco Heaters, Inc.
123	Taylor Instrument Companies
17	Thrush & Co., H. A.
100	Tuttle & Bailey, Inc.
95–96	Uni-Flo Grille Corp.
44	United States Radiator Corp.
22	Vinco Co., Inc.
111-A	Volcano Burner Corporation
88	Watts Regulator Co.
39	Webster & Company, Warren
42	Weil-McLain Company
90	Westinghouse Elec. & Mfg. Co.
84	Whitty Manufacturing Co., Inc.
93–94	Wing Mfg. Co., L. J.
79	Wickwire Spencer Steel Co.
54	Wood Hydraulic Hoist & Body Co.
53	York Ice Machinery Co.
82–83	York Oil Burner Co., Inc.
27	Young Radiator Company
68	Youngstown Sheet & Tube Co., The

Automatic Heat and Air Conditioning Questions

Figuring Size of Burner

To the Editor:

Our men, in figuring the proper size burner for a heating job take the size of the boiler instead of the feet of radiation as the basis of the burner capacity. We notice that a number of oil burner people use the feet of radiation and then add 50 per cent to same when they figure on burner size.

What we would like to know is how to figure the feet of radiation in radiators when the radiators vary in size. In some cases, the sections are wider than others.

Also how many Btu. are required to take care of 100 ft. of direct steam radiation at 3 to 5 lb. of steam pressure?

Also what information should a man secure so that the office can figure on proper size burner or quantity of oil or gas required to take care of the job.

Domestic Engineering is proving very satisfactory in every way—pleasing as well as instructive.

Our work up to this time has been entirely for industrial purposes and we are not up to date on domestic heating so have asked for the above information.

Pittsburgh, Pa. D. C. N.

To the Reader:

Your first question is in regard to the proper size of a burner for a heating job. The safest method is to check the entire job and determine if, in the first place, the radiation has been sized correctly to take care of the heat loss from the building in question. It is common practice to add 25 per cent to the radiation load to take care of the piping load. In addition, 25 per cent is added to the original radiation load to allow for the pick-up or starting load when the system is cold. In other words, the common practice is to allow 50 per cent increase in the radiation to take care of both the piping and the pick-up loads.

In any work of this kind it should be recognized that there always is the possibility of encountering a job where the radiation is either under or over estimated and where the boiler is either under or over sized. Accordingly, the best practice is to refigure the entire job so as to insure both a satisfactorily and economically designed installation.

In answer to your second question, we should suggest that you obtain from the manufacturers of the different types of radiation you encounter their radiator rating catalogs.

Your third question asks how many Btu. are required to take care of 100 ft. of direct steam radiation at 3 to 5 lb. of steam pressure. One square foot of steam radiation is considered as giving off 240 Btu. per hour when the room temperature is 70 degrees Fahr. On this basis 100 ft. of direct steam radiation would give off 100 times 240 or 24,000 Btu. per hour.

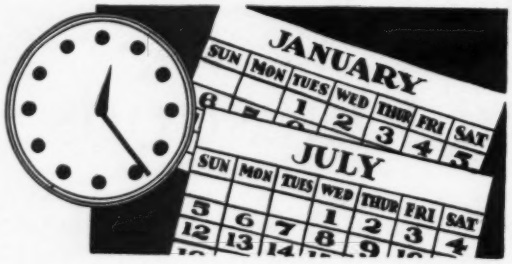
As for your last question this covers a subject which is too lengthy to handle here. Recent issues of Domestic Engineering have carried very complete articles on the figuring of oil burner fuel consumption. For instance, one article on this general subject was published in our October 1933 issue, beginning on page 70.

Control for two Boilers

To the Editor:

On page 63 of the January issue under the heading of Controls for Two Boilers, is an article written by a man who signs himself as W.H.R. from Minnesota. The reader explained a problem he had encountered wherein two boilers were installed in a certain residence. These, he explained, were connected to a vacuum vapor system with not exceeding three pounds pressure. He further stated that a large amount of radiation was installed in the residence and in cold weather, it has been necessary to operate both boilers when using coal as the fuel. However, since one boiler has been adapted for oil burning, the reader says it has been possible to carry the heat load and keep the other boiler and oil burner in reserve. The reader's difficulty came in the fact that new water frequently was injected into the boiler to make up for a deficiency due to excess radiation, and that when this occurred, of course, the temperature of the water in the boiler was lowered considerably. In addition to this, excess water eventually was discharged into the sewer, resulting in heat losses and excessive costs in operation.

Since this reader simply asks the question of how to remedy the condition and provide enough water in the boiler so that, with the exception of emergency cases, cold water will not be injected into the boiler, the writer's suggestion is that modern control equipment be connected to the job. With the modern type of feeder, no water is admitted into the boiler on a heating job until the water line in the boiler drops clear down to 1 in. of water in the glass which is several inches below the normal boiler line, an entirely different plan of operation from what was used a number of years ago. With this method of control, the oil burner is cut out of operation when the boiler water line reaches a predetermined low level. If the low level is caused by an over-rating on the boiler, obviously, when the burner stops, there is no further

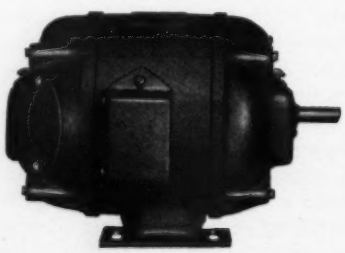


Always

Regardless of time, place or season, Oil Burners, Refrigerators and Air Conditioning Equipment must respond automatically to the needs or wishes of the user. For that reason manufacturers, distributors and dealers in this and similar motor-driven apparatus have for years relied on the continuous dependability of Century Motors the world over. • 1/250th to 600 h.p.

CENTURY ELECTRIC COMPANY
1806 Pine Street St. Louis, Mo.
Offices and Stock Points in Principal Cities

Century MOTORS



lowering of the water line. In fact, a water recovery is permitted as a result of condensate being brought back to the boiler. When the water line comes back to normal, the operation of the burner is resumed. In the event that the water level is lowered still further to another predetermined point, then the water feeder operates to inject fresh make-up water into the boiler.

In this way, the control equipment serves two purposes, first, to cut out the burner and second to feed water automatically to the boiler when the water line is reduced still further.

Chicago.

TO THE READER:

With these comments there can be no doubt as to how a burner and boiler should be controlled in order to protect it adequately from the danger of low water and at the same time provide means for automatically operating where water feeding is concerned.

Gas—

(Continued from page 74)

the return ducts were not shown. The return inlets in the rooms are indicated by the small arrows pointing to the walls.

The conditioning equipment has provisions for circulating, filtering, heating, humidifying and washing the air. In using cold water in the washing or humidifying spray in the summer, cooling and dehumidifying can be accomplished. The controls and electrical connections for this equipment are illustrated in Fig. 4. Notice that on the main control panel there is a summer and winter switch for changing the operation of the plant so as to make it in accord with the different seasons. The table below shows a summary of the calculations which were made in figuring the requirements on this job.

	Cubic Contents Cu. Ft.	Total Expose Sq. Ft.	Glass Sq. Ft.	Ceiling Area Sq. Ft.	Steam Radiation	Btu.	C. F. M.	Free Area		
								Brass	Register	Riser
Living Room	3160	360	116	350	105.5	25080	341	98	164	109
Dining Room	1815	140	33	201	38.5	9240	126	36	60	40
Bedroom No. 1	1260	216	21	140	33.7	8088	110	32	53	35
Bedroom No. 2	1440	144	15	160	27.2	6528	89	26	43	28
Bath No. 1	450	45	10	50	11.2	2688	37	11	18	12
Bath No. 2	600	36	10	52	11.1	2664	36	10	17	12
Bedroom No. 3	1080	120	30	120	30.6	7344	100	29	48	32
Kitchen	990	99	20	110	23.6	5664	77	22	37	25
Breakfast Room	1640	240	84	180	69.5	16680	227	65	109	73

$$\text{Steam Radiation} = \frac{CC}{300} + \frac{\text{Exp.}}{15} + \frac{\text{Ceiling}}{30} + \frac{\text{Glass}}{2}$$

B.T.U. = Steam Radiation × 240
Total Radiation = 350½
Total B.T.U. = 350 × 240 = 84,000
Unit installed — 960 — C.F.M. (101, 150 B.T.U.)
(960 × 1.19) ÷ 84,000 = 0136 FACTOR
C.F.M. = B.T.U. × .0136

Additional Offices Opened by G. E. Contracts Corporation

Three additional district offices have been opened by the General Electric Contracts Corporation for the Atlanta, Pacific Coast and Kansas City districts.

F. H. Denslow, previously at the headquarters of the corporation in New York City, has been named manager of the Kansas City district, with offices at 106 W.

14th Street, Kansas City, Mo. The territory includes the states of Kansas, Nebraska, and Colorado, and parts of Iowa, Missouri and Wyoming.

J. C. Saur, former manager of the Philadelphia branch office of the corporation, has been named manager of the Pacific Coast district, with offices at 235 Montgomery Street, San Francisco, Calif. Oregon, Washington, Nevada, Idaho, Montana, Utah, Arizona and part of Wyoming are included in this territory.

H. W. Krebs, formerly at the New York City headquarters of the corporation, has been made manager of the Atlanta district, with offices at the Red Rock Building, Atlanta. The territory includes the states of North and South Carolina, Georgia, Florida and Alabama.

The purpose of the General Electric Contracts Corporation is to extend to customers of the General Electrict Company in the home appliance field, through regular dealers, a complete financing service. The principal products financed by the corporation are General Electric refrigerators, oil furnaces, and air conditioning equipment. The corporation also makes available to General Electric dealers information on financial and legal problems involved in installment selling.

The corporation started operations in New York City on January 1, 1933, with headquarters in the new General Electric building at 570 Lexington Avenue. In addition to the three newly announced district offices, the corporation has offices in Chicago, Philadelphia, Cleveland, Schenectady, Louisville, and Dallas. The officers are George F. Mosher, president; R. E. Sincerbox, treasurer; A. D. Marshall, secretary, and J. H. Strube, auditor.

Oil Burner Companies Reward Star Salesmen with Trips to Bermuda

Rewards in the form of winter vacations to Bermuda are being presented to large numbers of star salesmen representing various oil burner and electrical manufacturing companies for their efforts in exceeding their sales quotas during the past few months. These men, who come from all sections of the United States, have definitely proved that business in the United States is on the upturn and they are confident that they will hang up new sales records during the new year.

The first important group to leave New York this year were the 125 salesmen of the Timken Silent Automatic Company, who left January 6 on the steamer "Queen of Bermuda." These men belong to the company's Annual Quota Club, whose members made a similar trip to Bermuda two years ago. E. V. Walsh, vice president and sales manager of the company, with headquarters in Detroit, was again in charge of this group. The party included President Willard F. Rockwell, Secretary-Treasurer W. C. Wood, Vice President Holdeman Finnie, and Sales Promotion Manager T. A. Crawford.

Also sailing on the same steamer were twenty distributors of the May Oil Burner Company, under the leadership of their sales manager, C. W. Cornellsen of the main office in Baltimore.

Another party of oil burner salesmen left New York, January 15. This group was made up of thirty star salesmen of the Electrol Oil Burner Company, accompanied by their wives. K. H. Thompson, advertising manager of New York City, was in charge of this party.

AT LAST! OIL BURNING WATER HEATERS HAVE BEEN PERFECTED!

Fully Automatic. Listed as standard by Underwriters Laboratories. Hundreds of owners from coast to coast report monthly fuel cost of $1.00 to $1.50. Trouble-free service.

Complete Line with Amazing Improvements Opens Vast Market!

NOW you can profitably handle water heaters—and meet all competition! Lonergan offers you

1. Equipment PRICED TO SELL. . . 2. HIGHLY EFFICIENT PERFORMANCE, without gas or electricity; no wick, no soot or odor; standard recovery rate; equal to any, regardless of fuel used . . . 3. Sensationally LOW FUEL COST; saves ½ to ¾ usual bills . . . 4. and for 1934 a COMPLETE LINE to fit every home with running water.

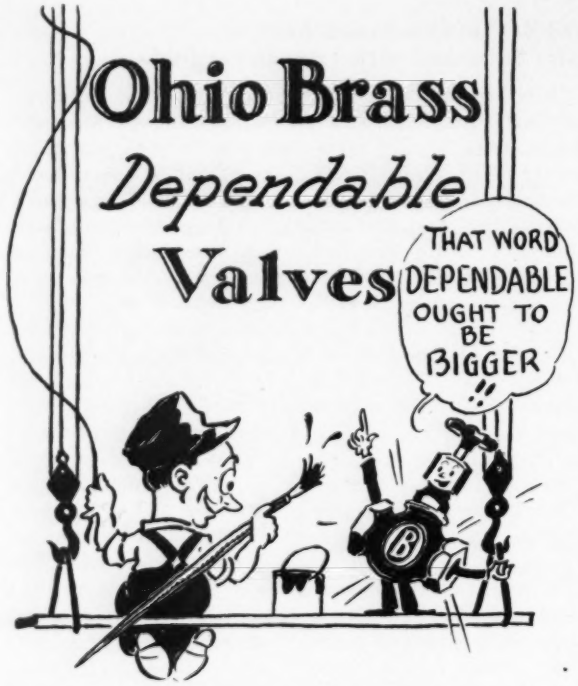
Built by experienced water heating engineers, PROVED by long use in the field. For further facts WRITE LONERGAN TODAY.

Conversion Type. Easily installed with any side-arm coil burner. Includes Pilot as in Matchless. YOU can make big profits selling these money-saving heaters. Get more information!

Manually Operated. NEW Constant-Burning Pilot ignites burner at turn of lever. Heats 5 times as fast as similar equipment. Appeals to mass market.

LONERGAN MFG., CO. DEPT. 12. LAPORTE, INDIANA

Write Lonergan Today!



The Ohio Brass Company
Mansfield 1661-V. Ohio

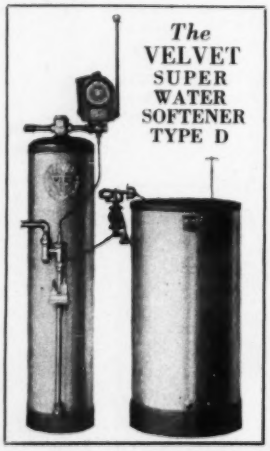
100% SERVICE ALWAYS—
it runs itself!

more service ... more economy ... more satisfaction .. more sales and more profits.

The Velvet Super Water Softener Type D is a New Era product in beauty, dependability and value.

It takes all the tiresome bother out of water softener use. It reconditions itself. Delivers complete service constantly because regeneration cannot be overlooked, neglected or forgotten. Completely automatic, simple, sturdy and without complications to interrupt service or require expensive attention. Reconditions while household asleep, so never interferes with faucet use. Operates cheaply. Economizes brine and wash water as both are controlled. Sizes for most all needs.

Priced for profitable volume selling it brings a new, greater and more profitable interest into soft water problems. Greatly increased business is made possible.
Three other models each built to the same beauty and quality standards, fit all other sales possibilities. Start now. Get our descriptions and prices. Go after orders. You'll find it profitable.



H. L. G. CO., KALAMAZOO, MICH.

Westinghouse Host to Utility Group at A. C. Meeting

A meeting for utility executives on the subject of air conditioning was held recently by the Westinghouse Electric and Manufacturing Company at its East Pittsburgh (Pa.) works. Officials of sales, engineering and operating departments of the Philadelphia Company and its subsidiaries, local Pittsburgh, Pa., utility system, were guests.

The enthusiastic response to a similar meeting held a month ago for executives of the West Penn Electric Company and its subsidiaries prompted the Westinghouse Company to hold this meeting for officials of the Philadelphia Company organization.

N. G. Symonds, Westinghouse vice president in charge of sales, was host to the visitors at a luncheon and, at the meeting which followed, introduced other company officials who spoke on various air conditioning problems.

Among the topics discussed were air conditioning as a central station load builder, air conditioning as a desirable load, marketing methods, effective sales tools, national advertising, the experience of some utilities. A demonstration of air conditioners in operation, one of each type manufactured by the Westinghouse Company, featured the meeting.

Among the forty guests were Joseph McKinley, vice president and general manager of the Philadelphia Company; E. W. Judy, vice president and general manager of the Duquesne Light Company; Thomas Fitzgerald, vice president and general manager of the Pittsburgh Railways Company; John Orr, manager of the Equitable Auto Company, and A. G. Butler, Pittsburgh manager of the Byllesby Engineering and Management Corporation.

Two Bulletins and a Circular on Heating Traps

Illinois Engineering Company of Chicago, Ill., has just issued two bulletins and a circular featuring its new radiator traps, its combination float and thermostatic traps for low pressure service, and its new steam trap. The bulletin on radiator traps consists of 12 pages, 8½x11 inches, and it illustrates and describes in minute detail the company's series G traps, which are designed and built to high standards of efficient operation, uniformity and durability. Modern precision machinery and equipment are utilized throughout their construction and only suitable materials of the most modern and durable quality are used. The company is confident that these traps will assure extra years of trouble-free, satisfactory and efficient service. Several charts showing the operating characteristics of these traps are included in this bulletin. The bulletin on combination and float thermostatic traps emphasizes the point that these traps with their positive operation and large venting capacity are recommended for draining fan heating surface, unit heaters, ventilating units, for dripping large mains or any service, where the demands are severe, with a heavy fluctuating load. The circular, which features the company's new steam trap, describes its several improvements and recommends its use for draining hospital, kitchen and laundry equipment, and for dripping steam air pressure piping.

Oil Burner Code Authority Reports Great Progress at Quarterly Meeting

The Oil Burner Code Authority held its regular quarterly meeting at Benjamin Franklin Hotel in Philadelphia on January 8 and heard many important reports. Chairman Morgan J. Hammers announced that the Committee on Uniform Cost Accounting has been authorized to present the proposed cost accounting system for the oil burner industry to the NRA Administrator in Washington. While no definite date could be anticipated as to when the uniform cost accounting system will be distributed to the industry, it was stated that the work will be expedited as rapidly as possible upon the Administrator's approval.

Mr. Hammers also submitted a report of activities to the meeting which was accepted and which disclosed the broad scope of the staff work in both its direct administrative functions and in rounding-out the plan for decentralized administration through local competitive areas presided over by area governors and chairmen.

The progress report of Mr. Hammers showed, among other developments, the following:

1. That the number of power burner manufacturers whose prices have been filed, as of December 31 is 154, including all major companies of the industry, there being 50 companies out of this 154 that produce close to 90 per cent of the entire products of the industry.

2. That the total number of revisions of prices that have been filed and distributed among members of the industry by this division is 30.

3. That the secretaries of state of the 48 states have been approached to determine the extent to which states have passed intra-state enabling statutes to the National Industrial Recovery Act with a view to placing the oil burner code on file in such states so that it becomes part of the laws of those states.

4. That the Code Authority not only had interceded at the Natural Gas Code hearing with a view to protecting the interests of the oil burner industry by demanding a revision of the gas code but also has asked to appear as a witness at any subsequent hearing which might be held by the Petroleum Advisory Board in the matter of increasing fuel oil prices as petitioned for by the National Coal Association.

5. That, as of December 31, 2,272 distributors and dealers had filed prices and in return received prices of those in their respective competitive areas. This exchange, it was reported, was undertaken in highly populous territories running largely in accordance with volume concentration, the first districts having been handled in the following order:

Area No. 10—Boston territory.
Area No. 12—Attleboro and Taunton, Mass.
Area No. 13—Fall River and New Bedford, Mass., territory.
Area No. 16—Worcester County, Mass., territory.
Area No. 17—Springfield, Mass., territory.
Area No. 23—Providence, R. I., territory.
Area No. 26—Hartford County, Conn., territory.
Area No. 27—New Haven, Conn., territory.
Area No. 205—Chicago, Illinois, territory.
Area No. 236—St. Louis, Mo., territory.
Area No. 225—Minneapolis and St. Paul, Minn., territory.
Area No. 29—Bridgeport, Conn., territory.
Area No. 30—Nassau and Suffolk Counties, Long Island, territory.
Area No. 31—Brooklyn and Queens, N. Y., territory.
Area No. 32—Manhattan and Bronx, N. Y, territory.
Area No. 214—Detroit, Mich., territory.
Area No. 219—Green Bay, Wis., territory.
Area No. 220—Milwaukee, Wis., territory.
Area No. 221—Madison, Wis., territory.
Area No. 249—Omaha and Council Bluffs, Nebr., territory.
Area No. 399—Los Angeles, Calif., territory.
Area No. 400—San Francisco, Calif., territory.
Area No. 33—Staten Island, N. Y., territory.
Area No. 34—Westchester County, N. Y., territory.
Area No. 43—Hudson, Passaic and Bergen Counties, N. J., territory.
Area No. 51—Washington, D. C., territory.
Area No. 56—Philadelphia, Pa., territory.
Area No. 391—Seattle, Wash., territory.
Area No. 393—Portland, Oregon, territory.
Area No. 36—Albany, N. Y., territory.
Area No. 44—Newark, N. J., territory.
Area No. 50—Baltimore, Md., territory.
Area No. 52—Wilmington, Del., territory.
Area No. 227—Dubuque, Iowa, territory.
Area No. 40—Rochester, N. Y., territory.

6. That the manual of administrative procedure for area governors has been completed and distributed among 200 area governors.

7. That a total of 119 meetings have been held in 21 states as part of the education and administrative duties of the Code Authority and the local associations acting on behalf of the Code Authority.

8. That the local oil heating associations have been increased from 24 to 36 and are actively functioning in support on the code in an important way.

REPORTS 99 PER CENT COMPLIANCE

9. That in the distillate division of the industry, with its 12,632 outlets of all types, compliance in the matter of excessive guarantees is about 99 per cent, according to reports received by the Code Authority and that 123 range burner manufacturers, covering about 85 per cent of the production, have filed prices and that 17 manufacturers filed revised price lists. The matter of retail price filing, which includes prices from a great number of department stores, has been reserved for further consideration because of the complexity of the task.

10. That reports from the field indicate that so-called "chiselling" among manufacturers declined rapidly during the last two months of the year and that there is a general expression from both manufacturers

and dealers, representing a fair cross section of the industry, to the effect that good results and a good degree of cooperation is expected generally throughout the industry co-incidentally with the application of the uniform cost accounting system.

11. That a total of 347 complaints have been handled and that complete compliance have been obtained in 160, with 45 cases still pending.

In concluding his report, Mr. Hammers stated: "Our industry, unwieldy and divisional as it is, has come under the provisions of this Code to date with a degree of compliance running into a high percentage and has complied effectively with respect to trade practices and is set to qualify under cost provisions leading toward marked improvement in the matter of trade chiselling and under-pricing from which the industry has been suffering seriously. The Government set a period of four months within which the Code Authority was to develop the cost accounting plan to the working stage and through the diligent efforts of those concerned the plan is now up for approval. Analyses of all conditions encountered to date point directly toward a consistent development of cooperation by the industry."

Those attending the Code Authority meeting were the following: W. Schwan, assistant deputy administrator, NRA; Morgan J. Hammers, chairman; H. Finnie, R. M. Sherman, W. J. Smith, R. S. Bohn, L. E. Johnson, M. E. Simpson, alternate for W. S. Salway, J. C. Johnson, alternate for H. Phillis, Harry F. Tapp, Arthur W. Clark and Charles Ott.

Stokers—

(Continued from page 82)

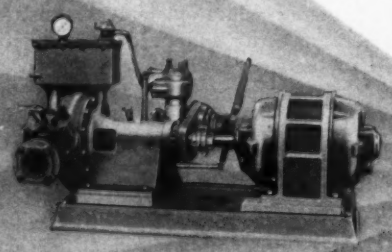
ideas to make the prospect visualize. As it is too important a feature to waste, we finally hit on the idea of temperature charts. We set up a recording thermometer in several homes that were heated with our stokers. Then we made other recordings in homes that were hand-fired. The comparison of a pretty blue line that dips and gyrates over a sheet of paper, with one that is steady and uniform is something that the most untechnical prospect can comprehend. There was more than humor in the remark made by one new customer as he inspected one of these curves: "I didn't have any idea that *my* home has been as uncomfortable as this all these years." For the industrial plant or apartment house prospect, the pressure chart (like the ones shown herewith) accomplishes the same purpose.

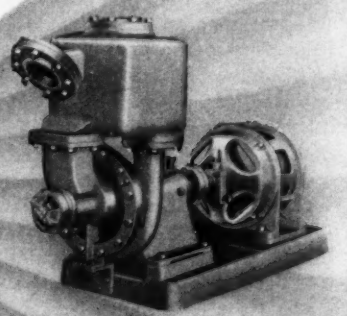
It happens that we are situated here in a manufacturing center where many of the home owners are men with technical training and a thorough knowledge of mechanics. There is an old saying that "You do not learn a thing until you teach it." It certainly must be true, for we have learned more about the mechanical features of our stokers in selling them to engineers and plant executives than in all the time spent in thumbing through sales manuals.

A prospect of this kind has an embarrassing way of firing questions at his interviewer that simply cannot be

PUMPING EFFICIENCY

If your problem is to pump clear liquids or liquids containing a large per cent of solids—you can be assured of highest pumping efficiency by specifying **Ames Self-Priming or Automatic-Priming Pumps.**





WRITE FOR BULLETIN NO. 1100

AMES PUMP COMPANY, INC.

30 CHURCH STREET • NEW YORK, N. Y.

Manufacturers of vacuum heating, condensate, centrifugal pumps, and fuel oil pumping-heating units

Division of American Locomotive Company

Representatives in all principal cities. Products manufactured and sold in Canada by Montreal Locomotive Works, Ltd.

answered unless the salesman has a full and thorough knowledge of his product. To know the relative merits of sleeve- and ball-bearings may seem unimportant, but we have found that little details of this character are the purchasing criterion of the engineering mind. It pays to learn about them.

Every man in the organization must be able to give an accurate description of each stoker part and the role it plays in the operation of the machine. A cutaway view of the gear movement and working assembly has been of great assistance in this regard.

Jobs frequently are encountered where a stoker cannot be installed without changing the location of pillars or building coal storage space or some similar change. This is always more or less of a bugaboo to the prospect, and objections frequently can be overcome by drawing up a neat sketch of the way the job will look when finished. This layout, when drawn to scale, helps in visualizing the appearance of a basement after the stoker is in, and somewhat to our surprise is frequently as much help to ourselves as to the prospect.

The best prospect for a stoker is the man who already owns one. It is a paradoxical maxim, but one that proves itself in the stoker business time without number. The owner of a stoker is apt to be a person of some standing in the community and frequently is interested in a number of enterprises. Many of our customers who started with a stoker in an apartment house heating plant have later added one to their home. Others who have been pleased with the improvement in home comfort have purchased stokers for plants or store buildings. It is an endless chain and is a healthy stimulus to us to make each purchaser satisfied with the many comforts and the economy that the stoker brings to him.

Like the oil and gas burner, the stoker is an excellent entering wedge for the sale of accessory heating equipment. We have more than doubled our sale of water feeders, for example, since we started installing stokers. The summer-winter hot water supply system works in well, too, and opens the way for selling submerged coil heaters.

All in all, the stoker can afford many Heating Contractors a welcome expansion to their present line where conditions warrant taking it on. They are fitted by experience and training as the logical outlet, and during a serious new building slump such we are now passing through, we have found the stoker a valuable backlog to a business that is, at present, all too dependent on new construction.

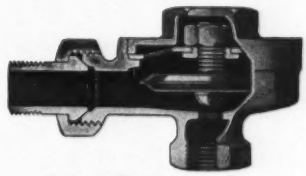
Showrooms—

(Continued from Page 68)

During the summer months, also, the Brockman selling staff does a substantial business in balanced smoke-pipe dampers, electric water circulators, clock thermostats and related appliances. These improvements are offered chiefly as an avenue to building a larger, better prospect list for burners. Brockman never pays premiums nor cash commissions for leads. He rewards his customers by free summer service and in similar ways. He finds that if customers are enthusiastic about their burners they are only too glad to give names of prospects without hope of other remuneration.

TWO COMPLETE LINES
..ONLY ONE RECOGNIZED
STANDARD of QUALITY
MILWAUKEE
HEATING SPECIALTIES

PACKLESS VALVES
•
THERMOSTATIC TRAPS
•
AIR ELIMINATORS
•
QUICK VENTS
•
SYPHON AND VACUUM AUTOMATIC AIR VALVES
•
WATER FEEDERS


Type H Thermostatic Trap

DRIP AND BLAST TRAPS
•
BOILER RETURN TRAPS

MILWAUKEE
"APPROVED" BRONZE VALVES

No. 507 Globe Valve

RADIATOR VALVES FOR STEAM AND HOT WATER
•
GATE VALVES
•
GLOBE VALVES
•
ANGLE VALVES
•
CHECK VALVES
•
STOP AND WASTES

COMPRESSION STOPS
•
NEEDLE POINT VALVES
•
SPRINKLER VALVES
•
PRESSURE RELIEF VALVES
•
BRASS UNIONS

"Milwaukee" Heating Specialties and "Approved" Bronze Valves are stocked and sold by the nation's leading Plumbing and Heating jobbers. Your entire needs are available at one source. Consider the convenience. Consult your best local jobber.

OFFICES IN 25 PRINCIPAL CITIES

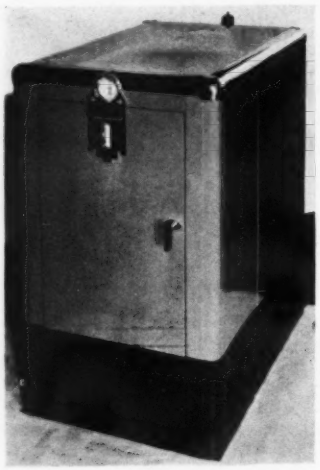
MILWAUKEE VALVE COMPANY
MILWAUKEE WISCONSIN

Products FOR Dealers

This section gives a report of the latest news of selected automatic heat and air conditioning products. The general new products section starts on page one hundred thirteen.

Automatic Oil Heating Plant

Here is an automatic oil fuel heating plant designed for homes and small commercial applications. Distribution of this equipment has just begun. The boiler is designed to operate either in connection with steam or hot water systems. The domestic hot water heater is provided with winter and summer control. The unit has been built with the idea of making it harmonize with modern basements which are used for recreation purposes. The apparatus and controls are incased entirely



in a furniture-steel cabinet of symmetrical design. The heating service consists of fins enclosing thin sheets of water. The idea is that these thin sheets of water will heat quickly, thus resulting in rapid steaming once the thermostat automatically places the burner in operation. In addition, the fins are designed to act as baffles, thus slowing the passage of heat to the flue. The air delivered to the burner, before being mixed with finely atomized oil, is preheated by its passing beneath the boiler combustion chamber. The air attains a temperature of 120 deg. Fahr. There are four sizes each for steam and hot water. Delco Appliance Corporation, located at Rochester, N. Y. is the manufacturer.

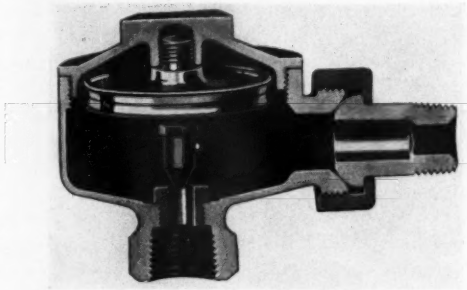
Automatic and Manual Radiator Valve

Completely automatic operation of radiator valves is maintained to be not desirable in some installations such as in hotel rooms in which guests may want the heat turned off completely at night; hospitals where occasionally it is necessary to maintain temperatures considerably in excess of normal requirements and in some commercial applications such as automatic telephone switch rooms where sometimes it is necessary to turn heat on even in summer to minimize the effects of excessive humidity upon very delicate mechanisms. To meet these needs, the individual radiator control valve, shown in the accompanying illustration, just recently has been placed on the market. This unit is an improvement over a previous device in that it has the addition of a manual operating range which allows normal hand setting of the valve in any position from full open to full closed, as with any hand valve. When set to operate in the automatic range, the device is made so that any room temperature from 60 deg. Fahr. to 80 deg. Fahr. will be maintained without further attention. Minneapolis-Honeywell Regulator Company, located at Minneapolis, Minn., is the manufacturer.

Development in Radiator Trap

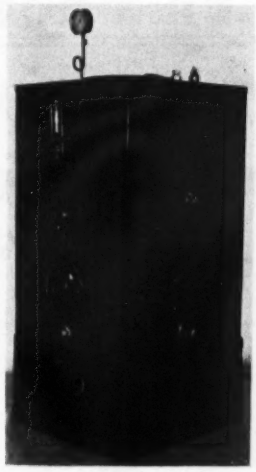
A new development in a radiator trap has been just announced. The item is described as having a duplex diaphragm designed for the purpose of providing high radiator efficiency over a wide temperature and capacity range. The trap is made to operate with a continuous oscillating stroke cycle and a uniform action. It is constructed so as to be highly sensitive, it being stated that a temperature change of less than 2 deg. Fahr. is necessary to open the valve its full normal operating stroke

on any ordinary size radiator. This trap has been made quickly responsive to slight temperature changes so that it can be especially adapted to use on concealed convection heaters where internal space is small and condensation rapid. The manufacturer is Illinois Engineering Company, located at Racine Avenue and 20th Place, Chicago, Ill.



A Jacketed Boiler for Oil Burning

The accompanying illustration shows the exterior of a jacketed boiler which has been placed on the market as a residential type unit. It is of the two-pass, downdraft and return-tubular type, designed and built especially for oil burning. The welded fire tubes are of copper bearing steel. Provisions for heating water for domestic supply are included in this unit. The water coil is designed to be of the instantaneous type. The manufacturer is the Titusville Iron Works Company, located at Titusville, Pa.

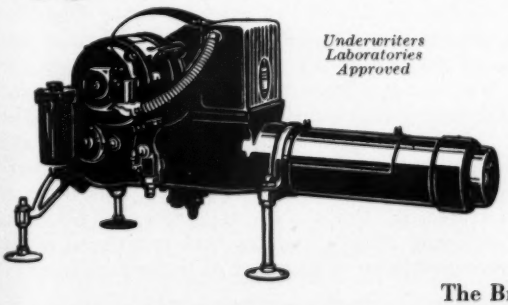


A New Oil Burning Boiler

The accompanying illustration shows a new oil burning boiler which has just been developed and which now is available in capacities up to 1400 sq. ft. of steam and

Why the BRANFORD OIL BURNER *wins approval of*

HEATING ENGINEER AND CONTRACTOR



Underwriters Laboratories Approved

The Branford Oil Burner from the first has proved the wisdom of adhering to sound engneering principles and the highest standards of manufacture. It is remarkably compact in design—smart in appearance. It uses *no* extra sheet iron coverings, yet is neatly housed. All internal parts are instantly removable with an ordinary wrench and without disconnecting valve bodies from the piping. There are no pistons or intricate parts. Its remarkable record in thousands of installations proves the value of its slow speed pump. Above all else it is built by the Malleable Iron Fittings Co. to satisfy both contractor and owner with a lifetime of perfect service.

Inspect It

It is readily apparent from an examination of the Branford that the burner is thoroughly designed —thoroughly built.

MODEL A up to 4 gals. per hr.

MODEL E up to 9 gals. per hr.

Territories

Several good territories are available for exclusive Branford dealership.

Write for full information.

MALLEABLE IRON FITTINGS CO.

Serving the Heating and Plumbing Industry for 70 Years

THATCHER AVE.....BRANFORD, CONN.

MORE SALES

BIGGER PROFITS

LYNN

Range Oil Burners

offer you a complete line

at prices for all

LYNN AUTOMATIC De LUXE
The Rolls Royce of Automatic Oil Burners

LYNN De LUXE
The Last Word in Range Oil Burners

NEW LYNN LYPRO
Famous for Efficiency

LYNN JUNIOR
Built-in LYNN Quality

Power Burner Dealers wanted to market the new Lynn Line of Hotel and Restaurant Equipment

Lynn Products are Nationally known for their uniform high quality

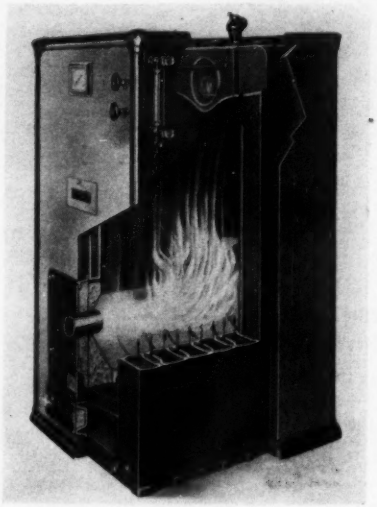
FULL GUARANTEES ON ALL MODELS

A few valuable territories still open. Send for complete catalogue with dealer discounts.

LYNN PRODUCTS COMPANY
7-17 WILLOW STREET, LYNN, MASS.

NRA MEMBER U.S. WE DO OUR PART

2240 sq. ft. of hot water radiation. It is furnished in assemblies of from 4 to 8 sections. The equipment has been designed with the idea of minimizing the standby losses when the burner is not operating. A revertible flue which is formed by means of passes between the adjacent section, applies the down draft principle and provides secondary heating surface. Gases in the flue travel must cool before descending to the smokehood



outlet and in so doing, the water is permitted to absorb additional heat. The horizontal flues to which the vertical flues conduct the gases of combustion are below the combustion chamber, thus completely water jacketing the boiler to the floor. The combustion chamber and flue areas are entirely surrounded by water to bring about a maximum transfer of available heat. Domestic water heating is accomplished by connection with one section of the boiler, the idea being that because the water line circulates through ⅛ of the upper nipple port area, the load is distributed over the entire boiler. The boiler is designed for use with all gun type burners and in addition, it is being furnished with a "matched" burner for boiler burner unit purposes. This boiler is manufactured by Crane Company, 836 So. Michigan Blvd., Chicago, Illinois, and has been introduced as the most recent addition to their line of heating equipment.

For 1934 Dealers—

(Continued from Page 63)

belief is based on the astonishing success that the first pioneer of the complete boiler burner unit job enjoyed, despite the fact that his price was considerably above the bare burner installation.

"The success of the complete job and the success of the boiler burner unit installation should bring home to dealers and contractors not only the sales possibilities of new jobs, but the tremendous field where burners have been installed in past years and where proper merchandising will get business on boiler feeders, summer and winter hot water installations, electric forced cir-

culation on hot water heating jobs, installations of vacuum air valves, and general reconditioning of the heating plant so that it can grasp and utilize the efficiency and economy of automatic heat."

BUILD WITH AIR CONDITIONING

C. A. Olsen, president, Fox Furnace Co., Elyria, Ohio, points out that "Hitch your kite to modern Air Conditioning," is a timely exhortation to pass on to heating contractors at the start of the year 1934 of the Era of the New Deal!

"Air Conditioning provides the heating contractor with something new to talk about; to demonstrate; and to sell. It brings back into the purchasing market, old customers to whom he has sold boilers and furnaces.

"If the heating contractor confines his activities to radiation and furnaces, his volume of sales will slump in the proportion that modern Air Conditioning replaces them. If Air Conditioning will be the multiple billion dollar industry that economists predict, the heating contractor who does not associate himself with the new industry is wilfully deprivng hmself of sales and profits."

"There is at present a tremendous volume of business available for those dealers of major appliances who are awake to the fact that what gets business these days is ability, originality, hard work and right product," says Lawrence Knapp, sales manager, York Oil Burner Co., York, Pa.

"Of course, there is not a lot of business for every dealer as every dealer could not get it anyway; but there is sufficient business for any dealer with enough ability and enough to show a nice profit at the end of the year.

"There are probably many dealers who doubt this . . . perhaps due to their whole make-up being one of doubt and pessimism . . . but they do not realize how many dealers there are who showed a nice increase in business this past year.

"To the dealers who really deserve results and profits, I suggest they take stock of themselves, their products, their organization, their methods and admit honestly that they themselves are probably the cause of not having more business.

"People still have to live . . . they buy clothes, food, cars . . . participate in amusements . . . buy radios, refrigerators, oil burners and many other things. These are the people you must find, and hard work will do it.

"Do you want the business that is available . . .then go out and work to get it!"

Nelson B. Delavan, sales manager of the Penn Electric Switch Co., Des Moines, Iowa, says that "it looks as though the trend is definitely more and more towards simplified equipment to perform more adequately functions which our engineering department indicates are necessary for greater comfort and more exact control. More and more the dealer is going to be called upon to understand automatic controls, their application and installation. The dealer who is not willing to either apply himself to this job or hire someone who will, is going to be left behind. The difference between thoroughly understanding the job to be done and the equipment to be used to do it, and just slipping over these fundamentals is going to be the difference between profit and loss at the end of the year, in our opinion."

Program for the Annual Meeting of A. S. H. & V. E.

The official program for the annual meeting of the American Society of Heating and Ventilating Engineers, which is to be held at Hotel Biltmore, New York City, February 5 to 9, has been announced and is as follows:

Monday, February 5

9:00 a. m. Registration.
10:00 a. m. Meeting of the Council.
1:00 p. m. Opening of Third International Heating & Ventilating Exposition at Grand Central Palace.

First Session, Monday, February 5

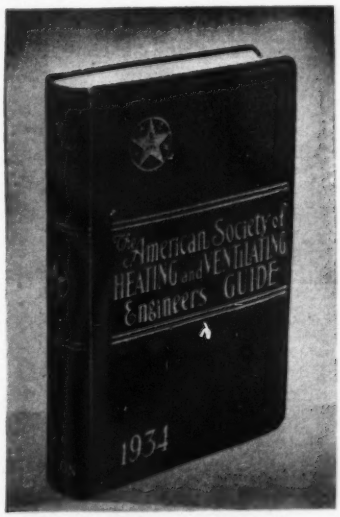
2:00 p. m. Greeting.
Response by Pres. W. T. Jones.
Technical papers:
Automatic Controls for Forced Air Heating Systems.—Konzo and Hubbard.
Heating Buildings with Hot Water.—Burt and Lewis.
Report of the Council.
Report of the Secretary.
Amendments to By-Laws.
Report of Committee on Code for Testing and Rating Condensation and Vacuum Pumps, John Howatt, Chairman.
Report of Tellers of Election.
8:00 p. m. President's Reception and Get-Together Dinner and Informal Dance, Paul Whiteman and his orchestra, Casino Bleu, Hotel Biltmore.
1:00 p. m. to 10:30 p. m. Heating and Ventilating Exposition.

Second Session, Tuesday, February 6

9:30 a. m. Report of Committee on Research, Prof. G. L. Larson, Chairman.
Technical Papers:
Construction and Equipment of the Pierce Laboratory.—Prof. C.-E. A. Winslow.
Selecting Temperatures and Wind Velocities for Calculating Heating Losses, by P. D. Close.
Radiation of Energy Through Glass.—Blackshaw and Houghten.
Studies of Solar Radiation Through Bare and Shaded Windows.—Houghten, Gutberlet and Blackshaw.
Report of Finance Committee, John Howatt, Chairman.
12:00 noon to 10:30 p. m. Heating and Ventilating Exposition.

Third Session, Tuesday, February 6

2:00 p. m. Report of Guide Publication Committee, W. L. Fleisher, Chairman.
Technical Papers:
A Proving Home for Air Conditioning Investigations.—Elliott Harrington.
Low-Cost Air Conditioning for a Small Residence.—M. K. Drewry.
Comfort Cooling with Attic Ventilating Fans.—Helmrich and Tuttle.



The new A. S. H. & V. Engineers Guide for 1934 which has just been published

Study of Summer Cooling in the Research Residence for the Summer of 1933.—Kratz and Konzo.

2:30 p. m. Ladies' Bridge and Tea.

7:00 p. m. Past Presidents' Dinner.

12:00 noon to 10:30 p. m. Heating and Ventilating Exposition.

Fourth Session, Wednesday, February 7

9:30 a. m. Report of Membership Committee. E. K. Campbell, Chairman.

Technical Papers:

Thermodynamic Properties of Moist Air.—Prof. J. A. Goff.

Study of Air Conditioning and Office Employees' Efficiency.—McConnell and Kagey.

Observations of Hay-Fever Sufferers in Air-Conditioned Room and the Relationship Between the Pollen Content of Outdoor Air and Weather Conditions.—Kendall and Weidner.

Report of Publication Committee, W. E. Stark, Chairman.

12:00 noon to 10:30 p. m. Heating and Ventilating Exposition.

Fifth Session, Wednesday, February 7

2:00 p. m. Tchnical Papers:

Diurnal and Seasonal Variations in the Small-Ion Content of Outdoor and Indoor Air.—Yaglou and Benjamin.

Relationship of Temperature and Humidity to Diseases.—Dr. Guy Hinsdale.

Air Conditioning in Its Relation to Human Welfare.—Dr. C. A. Mills.

Engineering in the Hospital of Tomorrow.—By Charles F. Neergaard.

7:30 p. m. Annual Banquet and Dance. Ballroom, Meyer Davis Music, Hotel Biltmore.

Thursday, February 8

9:30 a. m. Assemble at Radio City for Inspection of Mechanical Equipment in N. B. C. and British Buildings.

11:00 a. m. Meeting of the Nominating Committee.

Sixth Session, Thursday, February 8

1:30 p. m. Ladies' Theater Party.

2:00 p. m. Technical Papers:

Study of Fuel Burning Rates and Power Requirements of Oil Burners in Relation to Excess Air.—Seeley and Tavanlar.

Design and Valuation of Cast Iron Domestic Heating Boilers by Dr. Charles W. Brabbee.

Conference on Nomenclature.

Conference on Nomenclature.—Installation of Officers.—Resolutions.—Adjournment.

4:00 p. m. Organization Meeting of the Council.

12:00 noon to 10:30 p. m. Heating and Ventilating Exposition, Grand Central Palace.

Friday, February 9

9:30 a. m. Meeting of Manufacturers of Heating, Ventilating and Air Conditioning Industry.—Discussion of NRA Codes.

Will Hold Code Meeting at Hotel Biltmore in New York

Manufacturers of heating, ventilating and air conditioning equipment will hold a meeting in the Ballroom of the Hotel Biltmore, New York City, at 9 a. m., February 9. The purposes, organization and application of NRA codes to the heating, ventilating and air conditioning industries will be explained at this meeting, and every manufacturer should be represented.

Beverly S. King, assistant deputy administrator, will discuss the basic code for the heating, ventilating and air conditioning industries.

York Oil Burner Co., Inc., Elects Officers

The board of directors of the York Oil Burner Co., Inc., of York, Pa., has recently elected the following officers for the ensuing year: President, Robert C. Hoffman; treasurer and general manager, E. J. Kraber; vice-president in charge of sales, Lawrence Knapp; secretary, Robert H. Pentz; industrial engineer, James D. Lalor; engineer, Louis Paul, and engineer in charge of horizontal rotary and air conditioning equipment, Roger S. Kopp.

E. L. Sylvester
Sales Manager

W. B. Montague
Promotion Manager

Delco Appliance Corp. Holds Sales Meetings

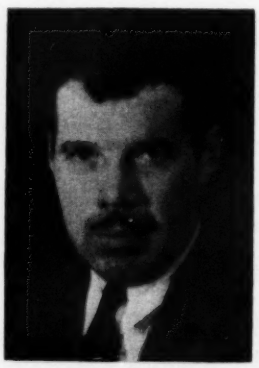
The merchandising plans of the Delco Appliance Corporation, Rochester, N. Y., subsidiary of General Motors, were presented at a series of sales meetings in twelve key cities throughout the East and Middle West January 15-25. These "Get Set" conventions, as they were called, were held in the interest of the corporations heat dealer-distributors, direct dealers, associate dealers and their salesmen. Those attending were advised to "get set" for a big year's business.

It was pointed out that this concern enjoyed a 364 per cent increase in oil burner sales in 1933, and that the present year promises even better things. New merchandising, sales training and sales promotion plans were announced.

These meetings were held in Rochester, Boston, Detroit, Hartford, Cincinnati, Rockville Centre, L. I., St. Louis, Bronx, N. Y., Newark, Philadelphia, Baltimore and Washington, D. C.

Speakers representing the Delco Appliance Corporation were E. L. Sylvester, sales manager; W. B. Montague, promotion manager, and J. L. Sedwick, advertising manager.

Meetings in a number of western cities not named in the foregoing list were arranged locally by E. L. Redden, assistant promotion manager.



E. L. Redden
Asst. Promotion Mgr.

J. L. Sedwick
Advertising Manager

Eleventh Annual Oil Burner Show

With a multitude of new names represented, both from the lists of oil burner and accessory manufacturers, the Eleventh National Oil Burner Show which is to be held in Philadelphia, March 5 to 9, at the Commercial Museum, had a total space reservation of 94 booths as of January 10th, according to Harry F. Tapp, executive secretary of the American Oil Burner Association, following a meeting of the board of directors of the American Oil Burner Association in Philadelphia.

Among those reserving space up to January 10th are the following:

American Oil Burner Association.
American Radiator Co.
American Society of Heating & Ventilating Engineers.
Anchor Post Fence Co.
Automatic Burner Corp.
Automatic Products Co.
Bell & Gossett Co.
Bethlehem Foundry & Machine Corp.
Burnham Boiler Corp.
Century Electric Co.
Century Engineering Corp.
Chase Brass & Copper Co.
Cleveland Steel Products Corp.
Detroit Lubricator Co.
Distillate Burner Mfrs. Association.
Domestic Engineering Company.
Electrol Incorporated.
Enterprise Oil Burner Co.
Fitzgibbons Boiler Co., Inc.
Florence Stove Co.
Fuel Oil Journal.
General Electric Co.
Gilbert & Barker Mfg. Co.
Jefferson Electric Co.
Kelvinator Sales Corp.
Kleen Heet, Inc.
May Oil Burner Corp.
Mercoid Corp.
Micro Corp.
Minneapolis-Honeywell Regulator Co.
Monarch Manufacturing Works, Inc.
McDonnell & Miller.
Nu-Way Corp.
Oil Burner Association of Philadelphia, Inc.
Oil Burner Code Authority.
Oil Heat.
Oil Heating Institute.
Penn Electric Switch Co.
Petroleum Heat & Power Co.
Plumbing & Heating Trade Journal.
Preferred Utilities Mfg. Corp.
Shell Eastern Petroleum Products, Inc.
Silent Glow Oil Burner Corp.
Standard Oil Co. of N. Y.
Taco Heaters, Inc.
Thrush & Company, H. A.
Timken Silent Automatic Co.
Tuthill Pump Co.
Viking Pump Co.
Watts Regulator Co.
Wayne Oil Burner Corp.
Webster Electric Co.
Westinghouse Electric & Mfg. Co.
Wood Hydraulic Hoist & Body Co.
York Oil Burner Co., Inc.

While convention speakers for both the merchandising session and the engineering session have not yet been announced, the following tentative convention schedule and program has been adopted:

Convention Program of the American Oil Burner Association, Inc.
Commercial Museum, Philadelphia, March 5-9

Monday, March 5

8:00 a. m.-5:00 p. m.—Installation of Show, Exhibition Hall, Commercial Museum.
9:00 a. m.-9:00 p. m.—Registration, Exhibition Hall Lobby.

Morning

9:30 a. m.-12:00 Noon—Meeting Executive Directors, Dealer Division.
9:30 a. m.-12:00 Noon—Meeting Executive Committee.

Afternoon

2:00 p. m.-5:00 p. m.—Meeting Board of Directors.

Evening

7:00 p. m.-10:30 p. m.—OPENING OIL BURNER SHOW, Exhibition Hall.

Tuesday, March 6

9:00 a. m.-9:00 p. m.—Registration, Exhibition Hall Lobby.

Morning

9:30 a. m.-12:00 Noon—Meeting Executive Directors, Dealer Division.

Afternoon and Evening

1:30 p. m.-10:30 p. m.—Show, Exhibition Hall.

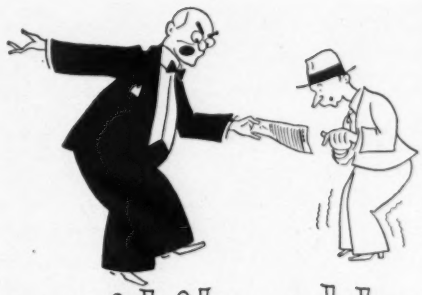
Wednesday, March 7

Dealer Day

9:00 a. m.-9:00 p. m.—Registration, Exhibition Hall Lobby.

Morning

9:45 a. m.-12:30 p. m.—*MERCHANDISING SESSION.



you said it would only burn 300 gallons . . .

Oh those pre-installation estimates! . . . and after a season or two when the hole in the all-metal nozzle enlarges . . .

The nozzle with the hole cut through a real Diamond.

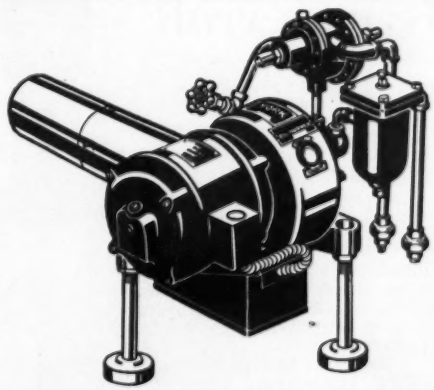
Then sell him a Dia-Jet. Because the hole is cut through a real South African Diamond it will never enlarge. We guarantee it. The burner will resume its original efficiency. You have made a friend of a kicker . . . and incidently a handsome profit.

Write us today for literature and our dealer's proposition.

Every gun type burner user a prospect . . . something new to sell at a profit to your old customers.

(Patent Pending)
Dia-jet
FIRE TESTED . . . UNIFORM

BALLOFFET DIAMOND WIRE DIES CO., Inc.
13-15 East 22nd Street New York City



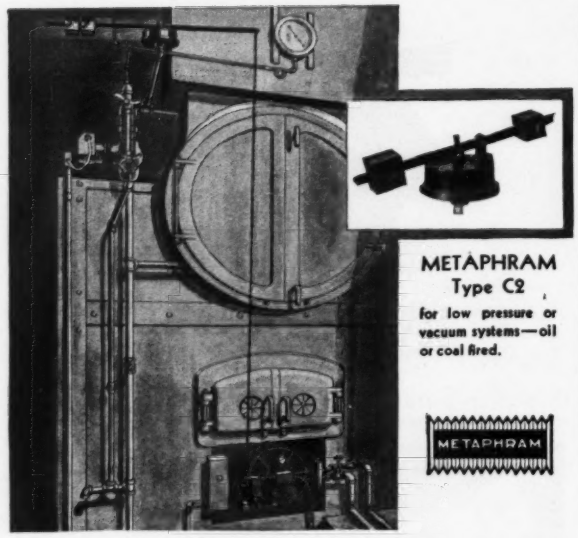
While Most of the World Marked Time-- York Oil Burner Company Worked On

And now we are ready. Our factories were turned into great laboratories during the dull years. Countless engineering conferences, sales and general meetings were held. Wheels hummed, new developments, new improvements are offered. York, the pioneer pressure burner manufacturer, one of the BIG FIVE in sales and production, now offers a proposition which is years ahead.

This line of equipment will be shown at the Heating and Ventilating Exposition in New York February 5th to 9th. The newest improved York models, the sensational new line of heavy oil burners and the new, beautiful and different boiler burner combination will be shown. The new boiler is a step forward in efficiency, eye appeal and operation. We manufacture many other products which will mean sales and profits to you.

If you visit the H & V exposition you will see what York has to offer. This line will help you make profits in the difficult times ahead. If you aren't coming to New York write for information.

YORK OIL BURNER COMPANY, Inc.
YORK, PA.

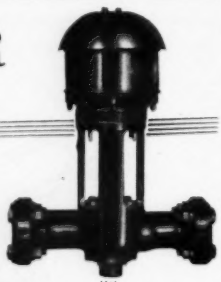


METAPHRAM Gradual Control
covers the entire range of domestic hot water and low pressure boilers and tank heaters, either gas, oil or coal fired.

Descriptive Bulletins on Request

NATIONAL REGULATOR CO.
2317 KNOX AVENUE CHICAGO

The **HYDROLATOR**

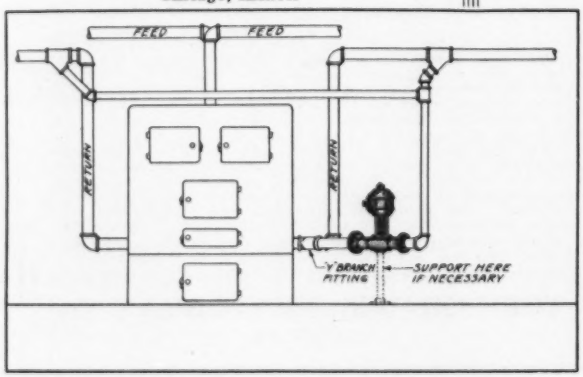


Forced Hot Water Circulation Means
1. Lower Fuel Costs
2. Quicker Heat
3. Uniform Heat

This unbelievably quiet circulation pump often saves its cost to the home owner during the first winter. Build your reputation as a "doctor" of "sick" hot water jobs with the HYDROLATOR.

Write for Bulletin 333-H

JANETTE MANUFACTURING CO.
560-62 West Monroe Street
Chicago, Illinois



Afternoon and Evening

1:30 p. m.-10:30 p. m.—Show, Exhibition Hall.
2:00 p. m.-4:30 p. m.—Meeting Manufacturer Division.
2:00 p. m.-4:00 p. m.—*Meeting Dealer Division.
4:00 p. m.-5:00 p. m.—Meeting New Board of Governors, Dealer Division.
5:00 p. m.-6:00 p. m.—Meeting Executive Directors, Dealer Division.

Thursday, March 8

9:00 a. m.-9:00 p. m.—Registration, Exhibition Hall Lobby.

Morning

9:00 a. m.-10.30 a. m.—Annual Meeting.
10:30 a. m.-12:30 p. m.—Meeting New Board of Directors.

Afternoon and Evening

1:30 p. m.-10:30 p. m.—Show, Exhibition Hall.
7:00 p. m.—ANNUAL BANQUET AND DANCE (informal) Crystal Ball Room, Benjamin Franklin Hotel.

Friday, March 9

9:00 a. m.-9:00 p. m.—Registration, Exhibition Hall Lobby.

Morning

9:45 a. m.-12:30 p. m.—ENGINEERING SESSION.

Afternoon and Evening

1:30 p. m.-10:30 p. m.—Show, Exhibition Hall.

*Note—All Dealers, member and non-member, are cordially invited to attend this meeting and take part in the discussion.

G. E. Salesmen on Trip to Bermuda

Having sold "perfect climate" with success during an 18-week competitive sales campaign, sixty salesmen of the General Electric air conditioning department sailed January 20 for Bermuda for a holiday trip of six and a half days. This trip was the grand prize offered to salesmen making their quotas in the campaign, which opened last August and closed on December 30.

In addition to the trip and tour of the island jeweled insignia as members of the G. E. Climateers' Club were presented to the salesmen at a banquet in their honor at the Hotel Bermudiana, in Bermuda, on the evening of January 23. The trip was made from New York on the Monarch of Bermuda.

The salesmen were accompanied by several officials of the department, including S. T. Whitbeck, E. J. Opal, W. A. Bowe, W. A. Scherff and A. C. Roy

Small Residence—

(Continued from page 72)

Guide indicates 75 deg. Fahr. as the upper boundary for the Summer Comfort Zone.

Thermal storage of the residence structure acts as a relatively large flywheel to assist the performance of a cooling unit. The previously mentioned 3-degree Fahr. rise during the hottest day was entirely acceptable, and was regained before the next morning by continued operation of the unit throughout the night at reduced rating, though the night was relatively warm.

Dehumidification did not afford the 50 per cent relative humidity median suggested by Comfort Chart in The Guide for 70 per cent was averaged. On one 36-hour run, 2 lb. per hour of condensate was collected, and inside air averaged three-fourths the water-vapor content of outside air. Water velocity through the radiator affected condensation rate appreciably. Drainage of condensation from the closely-spaced fins and tubes was satisfactory, though about one-sixth of the openings were stopped by droplets. Best radiator performance was 10 per cent below its unit heat transfer of 8.5 Btu. per hour per square foot per degree Fahrenheit when

heating. Approximately 5 per cent reduction was expected because of the lower fluid temperatures. Condensation heat transfer would have been a net gain had not some of the air passages clogged.

Room air seemed much like the enjoyable "fresh" air from Lake Michigan, or like that during a cool evening or after a rain, all of which are high in humidity. With adequate cooling, filtration and circulation, 70 per cent humidity in air may be more acceptable than 50 per cent humid air. At least, it is more typical of average summer air.

Table 3—Special Tests

Capacity, Approximately, %	25	50	100
General			
Date, 1933	March 26	March 19	April 9
Duration, hours	8	10	10
Outdoor temperature	45	26	40
Temperatures			
Air heated			
Radiator outlet	98	136	168
Radiator inlet	69	72	72
Radiator rise	29	64	96
Flue gases			
Boiler outlet	320	451	667
Smoke-pipe outlet	128	202	361
Boiler water			
Radiator inlet, average	142	172	206
Radiator outlet, average			177
Service water heater			
Inlet			206
Outlet			189
Service water			
Outlet			125
Inlet			108
Basement temperature	66	64	
Flue Gas Analyses			
CO_2	12.5	12.6	13.7
O_2	8.25		6.6
CO	0.15		0.3
Total Quantities, Lb.			
Humidity water evaporated			26
Fuel used	21.5	49	109
Refuse			
Per cent combustible	7.33	6.2	5.25
Air Flow			
Cfm above radiator	935	935	1175
Cfm at registers			1291
Cfm average			1233
Fuel			
Total fired, lb	21.5	49	109
Lb. per hour	2.69	4.9	10.9
Analyses			
Fixed carbon, %			92.03
Ash, %			6.7
Moisture, %	15	18.0	8.0
Btu per lb., as fired	10,600	11,000	11,900
Btu per hour fired	28,500	54,000	128,500
Heat Output, Btu per Hour			
By radiator	27,800	61,500	102,000
At registers			101,000
To heat service water	1,000	1,500	2,000
To evaporate humidity water	1,000	1,500	2,700
Total, at radiator	29,800	64,500	106,700
Total, at registers			105,700
Heat Balance and Efficiency Data			
Boiler only			
Losses, due to			
Moisture in fuel	1.1	2.1	0.93
Hydrogen (1%)	1.0	1.04	0.99
Dry flue gas	10.2	15.50	18.5
Moisture in air	0.15	0.25	0.35
CO	1.0	1.5	2.1
Combustible in refuse	0.5	0.5	0.41
Radiation	3.1	1.9	1.5
Total	17.1	22.8	24.8
Calculated efficiency, %	82.9	77.2	75.2
Boiler and Smoke Pipe			
Losses, due to			
Moisture in fuel	1.0	1.9	0.80
Hydrogen (1%)	0.9	0.95	0.85
Dry flue gas	2.4	5.4	9.1
Moisture in air	0.05	0.12	0.17
CO	1.0	1.5	2.1
Combustible in refuse	0.5	0.5	0.41
Radiation (Useful)	0	0	0
Total	6.0	10.4	13.4
Calculated efficiency, %	94.0	89.6	86.6

All registers were used for cooling without change. Return air averaged 2 deg. Fahr. lower than air at the breathing level, and 3½ deg. Fahr. difference existed from floor to ceiling. Register velocity of 400 ft. per minute caused the cooled air to ascend to the breathing level at about a 45-degree angle, after which it descended. Its velocity could readily be noticed at lower levels across the 12-ft. to 14-ft. rooms. This experience

Domestic Hot Water at a Bargain

EQUIP STEAM, VAPOR and HOT WATER BOILERS WITH

EXCELSO

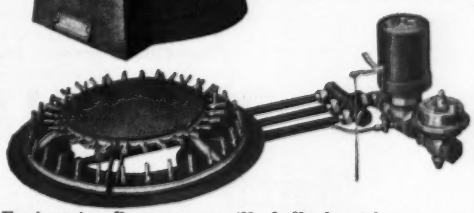
QUALITY WATER HEATERS

and your customers will secure Domestic Hot Water Supply at a Profit.

EXCELSO PRODUCTS CORP.
57 Clyde Avenue Buffalo, N. Y.
or
Ask Your Jobber

BARBER AUTOMATIC BURNERS

Illustrating No. 324-B Barber Automatic Burner installed in a round boiler. Note its simplicity of installation and the excellent scrubbing action of the flame.



Our Engineering Department will gladly furnish you practical, as well as technical co-operation in specifying Barber Burner Assemblies to especially suit and fit the grate areas for which they may be required.
WRITE us today for our NEW CATALOG and our latest attractive DISCOUNTS. Let us tell you how we assist with literature and co-operation that will help you to capitalize on the demand for Barber Automatic Heat.

THE BARBER GAS BURNER CO.
3702 SUPERIOR AVE. CLEVELAND, OHIO

A ROLL CALL of *Leaders in Their Line*

11th national OIL BURNER SHOW

Roll Call of Exhibitors to Date

American Oil Burner Assn.
American Radiator Co.
American Society of Heating & Ventilating Engineers
Anchor Post Fence Co.
Automatic Burner Corp.
Automatic Products Co.
Bell & Gossett Co.
Bethlehem Foundry & Machine Corp.
Burnham Boiler Corp.
Century Electric Co.
Century Engineering Corp.
Chase Brass & Copper Co.
Cleveland Steel Products Corp.
Detroit Lubricator Co.
Distillate Burner Mfgrs. Assn.
Domestic Engineering
Electrol Incorporated
Enterprise Oil Burner Co.
Fitzgibbons Boiler Co., Inc.
Florence Stove Co.
Franklin Oil Heating
Fuel Oil Journal
General Electric Co.
Gilbert & Barker Mfg. Co.
Jefferson Electric Co.
Kelvinator Sales Corp.
Kleen Heet, Inc.
Lonergan Mfg. Co.
May Oil Burner Corp.
Mercoid Corp.
Micro Corp.
Minneapolis-Honeywell Regulator Co.
Monarch Manufacturing Works, Inc.
McDonnell & Miller
Nu-Way Corp.
Oil Burner Association of Philadelphia, Inc.
Oil Burner Code Authority
Oil Heat
Oil Heating Institute
Penn Electric Switch Co.
Petroleum Heat & Power Co.
Plumbing & Heating Trade Journal
Preferred Utilities Mfg. Corp.
Shell Eastern Petroleum Products, Inc.
Silent Glow Oil Burner Corp.
Sinclair Refining Co.
Standard Oil Co. of N. Y.
Taco Heaters, Inc.
Thrush & Company, H. A.
Timken Silent Automatic Co.
Tuthill Pump Co.
Viking Pump Co.
Wagner Electric Corp.
Watts Regulator Co.
Wayne Oil Burner Corp.
Webster Electric Co.
Westinghouse Electric & Mfg. Co.
Wood Hydraulic Hoist & Body Co.
York Oil Burner Co., Inc.

PHILADELPHIA

March 5-9

For Details Write or Wire to

AMERICAN OIL BURNER ASSOCIATION

342 Madison Ave. New York, N. Y.

PLAN NOW TO EXHIBIT

of cooled air falling was found to be of great assistance in cooling an auditorium during the past summer. Discarding of cooling water onto the residence lawn proved a practical and desirable procedure. Irrigation requirements were not exceeded during the 312 hours of cooling found necessary. Table 5 summarizes cooling data for the summer.

Table 4—Cooling Tests

(June 7 and 8, 1933)

Time	Air Temperatures, Degrees Fahr: Outside SW	Outside NE	Outside SE	Rooms: Living Hall	Radiator Out.	Basement	Attic	Water Temp.: Out	Water Temp.: In	Lb. Condensate	Meter Readings: Water Cu Ft	Meter Readings: Electrical Kwh
6/7/33												
AM 7:30	79	..	79	77	75.5	66	72	..	66	54	...	....	....
7:30	80	..	..	77.5	76	66	71.5	81	66	55	...	846.5	37.7
8:00	81	..	..	77.5	76	65	71.5	..	..	..	...	853	....
10:00	..	..	..	77.5	76.5	65	71	..	66	55	...	884	....
PM 12:30	88	..	..	78	76.5	65	70.5	..	66	53	...	910	....
1:00	93	..	..	78	76.5	65	70.5	95	63	53	...	....	....
5:30	100	91	..	81	79	64	71	102	62	52	...	966	....
7:45	80	81	..	81	80	62	71	92	64	51	...	1012	....
9:30	..	..	..	..	..	..	..	..	..	51	...	1029	38.6
6/8/33												
AM 7:00	77	..	79	78.5	76	66	70.5	..	65	54	...	1120	39.4
PM 1:00	90	..	92	80.5	78	63.5	71	100	63	52	...	1125	39.8
6:00	..	..	86	82	81	63	72	96	63	52	...	1318	....
7:30	..	..	..	..	..	..	..	..	..	..	...	1328	40.2
Total 36.5 hr.											75	525.7	2.5
Ave. 1 hr.	85	86	84	79	77.5	64.5	71	95	64.4	53	2	900	70
Units											Lb.	Lb.	Watts
Cost per hr, c												0.81	0.21
Total, c												31	7.5
per day, c												15.5	3.8
per day, water and electricity, c												19.3	

Summary of Cooling Tests

June 7 and 8, 1933

Humidity Results		
Dehumidification, lb. per hr., average	2	
6/7/33, 5:30 PM		
Temperatures, degrees Fahr	Inside	Outside
Wet bulb	72.5	81
Dry bulb	79.5	91
Per cent relative humidity	73	66
Moisture content, grains per lb. air	112	148
Relative moisture content, %	75	100
Cooling Results		
Duration of continuous test, hr	36.5	
Average outside air temperature, degrees Fahr	85	
Average inside air temperature, degrees Fahr	78	
Average temperature difference, degrees Fahr	7	
Maximum outside temp., deg. Fahr. (Weather Bureau)	94*	
Maximum temperature difference, deg. Fahr	16	
Water flow, lb. per hr	900	
Electricity used, watts	70	
Average cost per hr., total	1c	

*82% sunshine on June 7, 99% on June 8.

Considering the extremely acceptable relief the cooling equipment afforded at the modest operating cost of 1.27c per hour and nearly negligible investment cost, the system can certainly be considered a practical success under the particular local conditions prevailing in Milwaukee.

Table 5—Summer Cooling Data and Costs

Month	June	July	August	Sept.	All
Hours of cooling	186	88	16	22	312
Cooling water, cu. ft.	2,793	1,671	340	495	5,299
Cooling water, lb. per hr.	940	1,190	1,330	1,390	1,060
Cooling cost, $	1.68	1.00	0.20	0.30	3.18*
Cooling cost, $ per hr.	1	1.1	1.25	1.35	1.02
Electricity, 26 kwh at 3c					$0.78
Total cooling cost for summer					$3.96
Total cost per hour					$0.0127
Estimated total cost for normal summer					6.00

*$5.84 was total billed for period of May 12 to September 26, 8,900 cu. ft. at 6c per 100 cu. ft. plus 50c service charge. 4,900 cu. ft. was used the previous summer.

When studying tap water temperatures for cooling, it is extremely important that they be taken during periods of continued warm weather, when residential water use is high and distribution temperature rise is smallest. September cooling in Milwaukee was as satisfactory as in June, though the pumping station is 6 miles distant.

It is emphasized that these cooling results were obtained with an efficient, counterflow radiator and reasonably cool tap water. Careful attention to radiator design

does much to make tap-water cooling acceptable. Air can be cooled within 5 degrees Fahr. of the entering water temperature, and the outlet water temperature can be 5 degrees Fahr. higher than the cooled air by proper design.

For the average summer in Milwaukee $6 summer cooling costs are estimated. Though June was 10 degrees Fahr. warmer than ordinarily, July and August weather was favored with an unusual preponderance of

Table 6—Capacity and Design Data of Equipment

BOILER: Cast iron, round sectional, 280 sq. ft. 8-hr. rating, 825 sq. ft. rated capacity, 18 in. diameter, 1.76 sq. ft. grate. 48 in. high, 22 in. outside diameter. Approximately 18.75 sq. ft. heating surface. Water capacity 90 lb. Total weight, 700 lb.

Covering: ¾ in. plastic cement having 0.8 Btu per hour per sq. ft. per degree Fahrenheit per 1 in. conductivity, painted aluminum bronze.

Grates: ⅛ in. opening, 3 in number.

SMOKE PIPE: 9 in. diameter, 10 ft. long, air-tight 24-gage sheet metal, painted black.

RADIATOR: 20½ in. × 23⅜ in., automotive-type, fin and tube, 167 sq. ft.

Fins: 6 per inch, 3⅝ in. × 23½ in., 0.005 in. thick, 140 total.

Tubes: ⅛ in. × ¾ in., 0.008 in. thick. ⅞ in. spacing, 4 rows deep, 2 per pass, 184 total tubes.

Water boxes: 18 gage brass. Inlet water box has internal baffle. 2-in. standard pipe connections.

2.25 sq. ft. air flow area, 5.9 sq. in. water flow area per pass. 26 per cent direct surface, 74 per cent finned surface.

MOTOR: 1/20-horsepower, 1140 rmp., 110 volts, unit heater type. Totally enclosed, wick oiling, 57 per cent efficiency, 55 per cent power factor, 1.07 amps, 65 watts at full load. Rubber mounting.

FAN: 4 blade 16-in. propeller type.

FILTER: 4.20 in. × 20 in. × 2 in. oiled glass-wool units in parallel.

HUMIDITY PAN: 6 in. × 20 in. × 20 in., 12-gage sheet pan. 2—16-in. lengths of 1-in. pipe and return bend for heating coil.

LEADER PIPES: 2.5 sq. ft. flow area, composed of 34 ft. of 8-in. pipe and 15 ft. of 10-in. pipe.

COLD AIR RETURN PIPES: 2.35 sq. ft. air flow area, composed of 21 ft. of 12-in. pipe.

winds from Lake Michigan which limited daytime temperatures, causing only $4 cooling cost. Milwaukee's incremental water and electricity costs of 6c per 100 cu. ft. and 3c per kwh. are low, but doubling or trebling of the actual cooling costs would not make cooling impractical.

TOTAL ANNUAL COSTS

Using data from the previously installed warm-air furnace and from the present installation, costs compare as follows:

Installation	Warm-Air Furnace	Air-Conditioning Unit
Initial cost, installed	$200.00	$250.00
Annual fixed charges, 12%	24.00	30.00
Operating Costs		
Heating		
Tons coal	10.0	8.5
Cost per ton, $	8.50	8.50
Coal cost, $	85.00	72.25
Electricity, 133 kwh at 3c	....	4.00
Total cost, $	$ 85.00	$ 76.25
Cooling		
Water cost, $	....	4.85
Electricity cost, $	....	1.17
Total cost, $	....	$ 6.02
Service water heating during summer (4 months)		
Gas Cost, $0.75 per M, $	6.00	....
Coke cost, $	....	4.00
Maintenance		
Annual average, $	15.00	5.00
Total annual operating and fixed charges	$130.00	$121.27

Better thermal economy and lesser maintenance of the newer unit more than pay its summer operating costs. The advantages of having year-round conditioned air, with less attendance, are incidental.

Design and actual operating data are included herein

BALANCED RADIATION

COMPLETE and correct venting of air from the radiator may *now* be secured by installing VENT-RITE Radiator Air Valves!

Equipped with an adjustable venting device, a feature not found on any other radiator valve, VENT-RITE Valves accomplish a *properly controlled* and *uniform radiation* throughout the house — and a *correctly balanced* heating system is positively assured.

VENT-RITE Valves are precision made — easy to install, regulate and service — and guaranteed to give years of satisfaction.

NICKEL SILVER VACUUM CHECK
VENTING PORT in heavy machine screw cap.
⅛" VENT PORT. Can be regulated to any desired capacity.
NICKEL SILVER VALVE PIN
FLOAT. Thermostatic in action giving double action seal.
HEAVY HEX. LOCK NUT
THERMOSTATIC BELLOWS Sensitive and positive in action, perfecting double action seal.
LEAD WASHER. Makes joint leak proof.
DROPPED FORGED BASE
AIR CHANNEL
SYPHON TUBE removes water.
VENT REGULATING SCREW

Write today for Catalog information

ANDERSON MANUFACTURING CO., 195 Albany St., Cambridge, Mass.

VENT·RITE

(CONTROLLED VENTING)

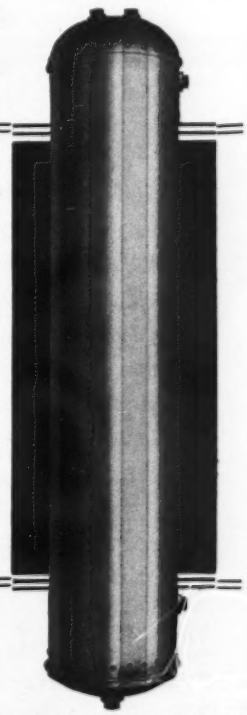
RADIATOR AIR VALVES

GERSTEIN & COOPER

GUARANTEED

Copper Tanks and Range Boilers

Riveted Top and Bottom



represent the cumulative experience of more than 30 years of specialized study and experience.

When you specify — and use G & C Guaranteed Copper Tanks and Boilers you are positive of getting the BEST. For every G & C product is produced under the most rigid engineering standards with many exclusive G & C features developed in our own engineering department.

The G & C Copper Boiler is an improved type boiler that corrects the disadvantages of ordinary hot water boilers and simplifies the sales problems of the dealer.

Write for descriptive circular of the new, improved G & C Domestic Copper Range Boiler

GERSTEIN & COOPER CO.

1-3 West Third St., So. Boston, Mass.

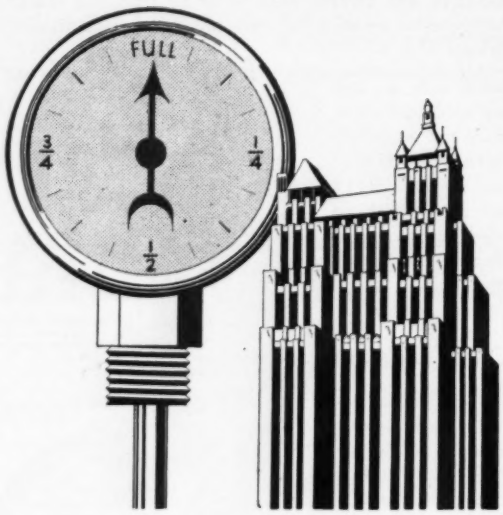
Representatives

Gerstein & Cooper Co., Baltimore, Md.; Gerstein & Cooper, New York, N. Y.; Troop Water Heater Co., Pittsburgh, Pa.; Strong, Carlisle & Hammond Co., Cleveland, O.; Edw. Sinn, Harrison, N.J.

Specify G & C Guaranteed Boilers

There is a type for every installation—for hotels, apartments, clubs, residences, public buildings, etc.

A GOOD GAUGE



to go by in selecting your convention home!

The hotel you choose as your New York home when at the Heating and Ventilating Exposition must "MEASURE UP" to several things, to be ideal for your enjoyment. It must be convenient, popular, "homey" and gay. Then, of course, its rates must be reasonable.

Diagonally across the street from Grand Central Palace—a short walk from trains, theatres, shops and business offices—Hotel Lexington scores 100% in location. You'll find many of your associates making it their headquarters. And Hotel Lexington rooms and food are outstanding in quality. Wining, dining and dancing to Little Jack Little's famous music in the Silver Grill furnish an abundance of gayety at all times. Room rates from $3 a day single, $4, double. Reservations NOW, advised!

HOTEL LEXINGTON

48th Street and Lexington Avenue, New York

Directed by National Hotel Management Co., Inc.
Ralph Hitz, President

Charles E. Rochester, General Manager

to show that satisfactory year-round air conditioning can be practiced under the particular existing conditions in Milwaukee at no greater total operating and investment cost than simple warm-air heating. High boiler efficiency, low cooling cost, and moderate equipment costs make this result possible.

Electricity—

(Continued from page 78)

proper external resistance. In addition to this the current at starting (starting current or kv-a) is also decreased when this resistance is inserted.

A single phase current does not have a rotating magnetic field at standstill, which is necessary in an A. C. motor to produce rotation, but only a pulsating field. If however the motor can be started the secondary currents induced in the rotor will be sufficiently out of phase with the primary field to simulate a rotating field. Various electrical schemes are resorted to in order to get the motor and its load started and up to speed.

With *desk fans* a so-called split phase or starting winding of high resistance is used in addition to the main or running winding. This produces the equivalent of a rotating field similar to that of a two phase motor. After reaching near full speed this starting winding is cut out by a governor switch.

On larger sized motors, a commutator on the rotor interconnects the rotor winding to cause the induced current to set up a repulsion between the stator field and the rotor induced current. This is called a *repulsion—induction* motor. Fig. 5.

Still another type of single phase motor is the *capacitor* type. Here the primary has two windings while the rotor has a squirrel cage winding essentially the same as for a standard two phase motor. The primary rotating field is produced through the phase displacement caused by the capacitor in one winding.

For fan and pump drives a single value capacitor gives the desired starting and running characteristics and even permits of simple speed adjustment as required by small ventilating fans. Higher starting torques, as required by loaded compressors, can also be secured with this type of motor but a different value capacitor is required for starting than for running, necessitating a governor or transfer switch.

The synchronous motor has a primary winding on the stator of the same type as the induction motor. The motor however consists of a direct current field winding on definite pole pieces which are fastened to a field ring or spider mounted on the shaft. Fig. 6. In the face of these pole pieces, that is next to the stator, is a squirrel cage winding which gives the motor its starting and accelerating torque characteristics, the same as for the squirrel cage motor. When the motor reaches almost full speed the field is energized by connecting it to an outside source of D. C. current through the brushes and slip rings on the motor shaft. This causes the motor to synchronize or pull into step; that is lock electrically with the rotating primary poles. The motor then runs at the same speed as the primary poles—called synchronous

speed—for all loads. There is no speed slip as in the induction motor.

Synchronous motors are built in two characteristic lines called "high speed," Fig. 7 and "low speed," Fig. 6. The former is used for general applications similar to the squirrel cage motor, while the latter is used where lower speeds are required, such as for direct driven reciprocating compressors.

Since the speed determines the number of poles it is evident that the low speed motors, requiring a large number of poles, will necessitate a relatively large diameter rotor. This results, because of the design factors, in a narrow frame for the stator. It is not economical to make induction motors in these low speeds, primarily because the power factor and efficiency would be too low to be an economical drive.

The starting and accelerating torque characteristics for the two types are usually quite different but standard torques for each type are those generally required for the driven machines.

Synchronous motors can be designed to carry any leading power factor desired but generally they are rated on a basis of the horsepower at either 100 percent power factor or 80 percent leading power factor. The leading power factor motor, and the 100 percent power factor motor to some extent, will counteract or offset the lagging power factor of induction motors in the same plant so that the power factor of the total current can be greatly improved by use of synchronous motors wherever possible.

In the direct current motor Fig. 8, the pole pieces, with their field windings, are attached to the field frame and, with the feet, form the stator. In the rotor, called the armature, the coil ends of the winding are connected to the segments of the commutator. Current in the armature changes with the load but the field current may be constant or changing depending upon the type of motor and this greatly effects the characteristics of the motor.

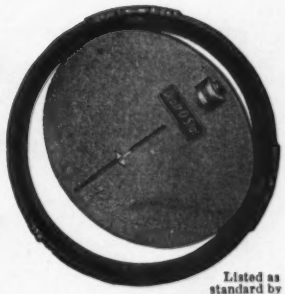
Shunt motors have the field winding connected across the D. C. voltage so its field is constant. This results in a motor having essentially a constant speed for all loads. By varying the field current, using an external field rheostat, the motor speed can be adjusted over a wide range. This is the most economical method of securing variable capacity of the driven machine. The shunt type motor is used for practically all general drives where D. C. is available.

In the *series motor* the field winding is connected in series with the armature so that the load current goes through both. This results in a motor having a wide speed variation between no load and full load torques but with very desirable starting torque characteristics.

With the *compound wound motor* the field is part shunt and part series. The motor therefore has speed characteristics between the constant speed shunt and the very drooping speed series motor. This type of motor is applied principally to hoists, punch presses and similar drives.

All motors require a controller for starting the motor and, where necessary, for securing speed adjustment. The various methods of starting and speed control, as determined by the control, have much to do with the motor characteristics, as delivered to the drive, and must be taken into consideration when selecting and applying motors.

Controls
Drafts
AUTOMATICALLY



Listed as standard by Underwriters Laboratories

The HOTSTREAM

DRAFT-O-STAT

95% of the gas, oil and coal-fired furnaces and boilers need "Draft-O-Stat" to insure maximum combustion efficiency. Large manufacturers and engineers recommend it. Users claim up to 25% fuel savings.

Domestic sizes 6" to 20". Industrial sizes with hand control 16" to 36". Ask about our exclusive franchise on industrial types.

See Display, Booth No. 87 International Heating and Ventilating Exposition

INDIRECT HEATERS

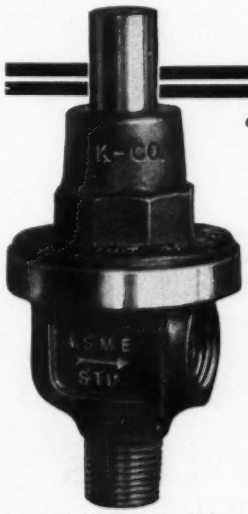
Supply hot water at practically no operating cost. Easily installed on any type of boiler. Every one you sell means a satisfied customer —made in a complete line of sizes.

Write for descriptive folder

THE HOTSTREAM HEATER CO.

"Makers of Heaters That Heat"

CLEVELAND OHIO



A ½-Inch D. P. 22 Valve

The Kitson Valve is designed and constructed in accordance with A. S. M. E. Code Specifications.

"Here's a Necessary, Efficient and Easily Sold Valve"

The KITSON Diaphragm PRESSURE RELIEF VALVE

This neat, mechanically correct, non-corrosive little VALVE actually MAINTAINS A "SAFE" WORKING PRESSURE in:

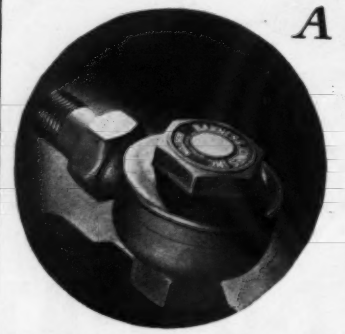
Domestic Water Supply Systems
Hot Water Heating Systems
Range Boilers
Storage Heaters

The Kitson Diaphragm Pressure Relief Valve "automatically releases" any increase in water volume, due to expansion under closed heating conditions. SEND FOR LITERATURE.

"For Sale by Wholesalers and Jobbers"

KITSON CO.

WESTMORELAND & STOKLEY STS.
PHILADELPHIA PA.

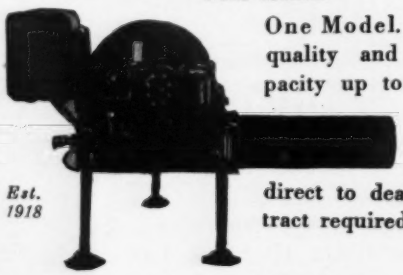


A NEW THERMOSTATIC TRAP

A cage contains the thermostatic member, carries its own seat and is a complete operating unit in itself. Easily and quickly replaced without special tools; simply lift out the old unit and drop in the new one. Send for illustrated Bulletin 234.

BARNES & JONES *Inc., 128 Brookside Ave.*
JAMAICA PLAIN, MASS.

The Fairfield Oil Burner
NRA Member



One Model. Featuring quality and flexible capacity up to 3000′ steam radiation. Lowest price. Sold direct to dealer—No contract required.

Est. 1918

Greenwich, Conn.

DOMESTIC HOT WATER • RAPID HEATING • HEAT CONTROL • *All from this single Automatic Unit*

B. & G. TRIPLE DUTY HEATER

Here's an item with a real sales story of economy and comfort for owners of hot water heated homes—**the B & G Triple Duty Heater provides heat and hot water at less than the cost of heating alone!** Increases circulation, automatically controls room temperature and assures almost instant heat at radiators upon demand. Rugged design, rubber-cradled, noiseless motor. Write for details.

BELL & GOSSETT COMPANY
3000 Wallace St. Chicago

15 PIECES LESS
TO HANDLE AND TO MAKE UP MEANS DOLLARS SAVED WHEN
INSTALLING

CONVECTOFIN
The BUILT-IN HEATER
For room heating. Use in place of radiators, with your favorite boiler. Ask for data. No charge.
COMMODORE HEATERS CORP., 11 W. 42nd St., New York

Appointed Distributor at Washington, D. C.

J. S. Brookbank, formerly sales manager for L. P. Steuart & Bro. Company of Washington, D. C., recently resigned from that concern to become a distributor for the Century Engineering Corporation of Cedar Rapids, Iowa, manufacturers of automatic oil burners. Mr. Brookbank has established temporary headquarters at 2701 Fourteenth Street, N. W., Washington, D. C.

New Fluid Heat Dealers Appointed

Frank P. Harbin, sales manager of the Fluid Heat department of Anchor Post Fence Company of Baltimore, Md., has appointed new dealers as follows: John C. Evans, Belair, Md., and Chapman's Garage, Center Moriches, N. Y. Harry Ernst, who has been representing the Fence Division of the Anchor Post Fence Company at Springfield, Mass., since 1924, has formed a partnership with Horace J. Honey under the name of Fluid Heat Company of Western Massachusetts, and has secured the Fluid Heat franchise for Springfield.

Appointed Wholesaler Representative in Philadelphia

K. L. Schuman has been appointed wholesale representative for the Fluid Heat Division of the Anchor Post Fence Company of Baltimore, Md., to cover Pennsylvania and the lower half of New Jersey. He will make his headquarters at the Anchor Post Fence Co's branch office at Broad Street and Allegheny Avenue in Philadelphia. Mr. Schuman was formerly sales manager of Eastern Rolling Mills Company and more recently associated with the Fluid Heat Division retail organization in Baltimore.

Promotions in L. P. Steuart & Brother Company

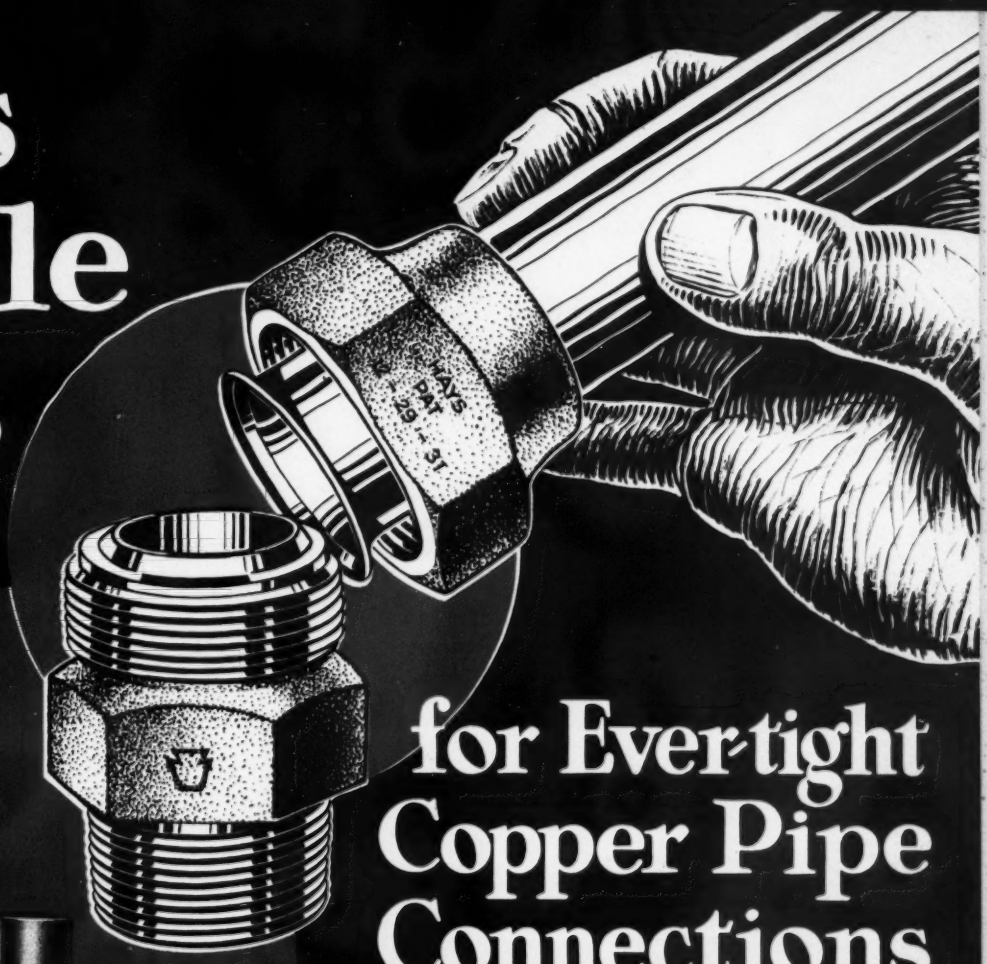
E. W. May has been promoted to the position of sales manager for L. P. Steuart & Bro. Company, fluid heat dealers in Washington, D. C. Mr. May has been a member of Steuart's retail sales staff for the last three years. Coincident with the promotion of Mr. May, it is also announced that A. W. Langley has been promoted to the position of assistant general manager and that Bruce Tuxhorn has been made service manager.

York Oil Burner Co. at the Heating Exposition

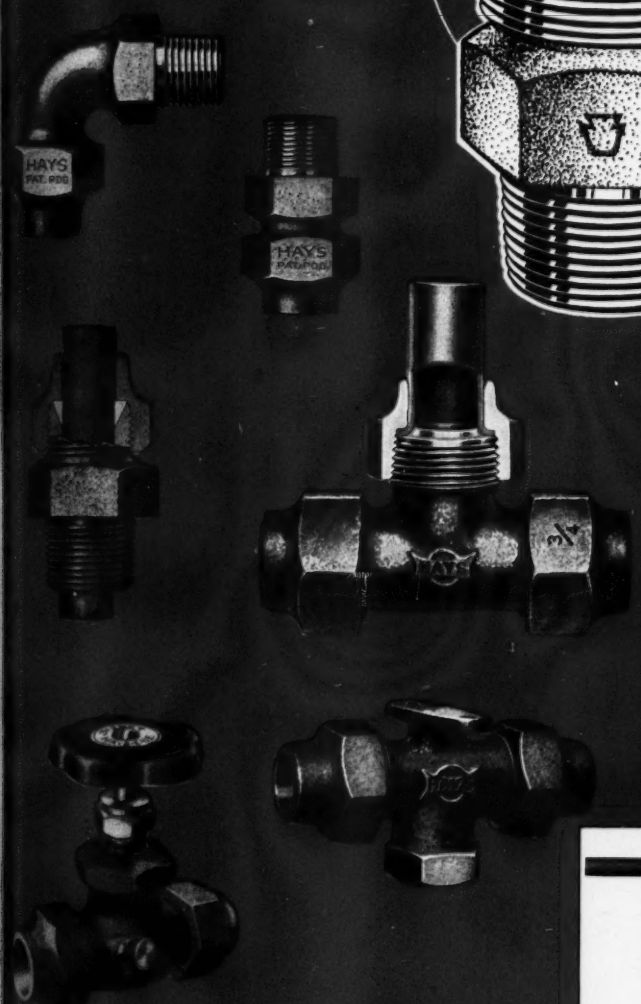
The York Oil Burner Company, Inc., of York, Pa., will exhibit its line of equipment at the Third International Heating and Ventilating Exposition in Grand Central Palace, New York City, February 5 to 9. This line consists of domestic oil burners, boiler-burner units, horizontal rotary burners, industrial equipment, air conditioning room units and oil burner accessories.

On Monday, February 5, this company will entertain all its dealers in the Metropolitan-New York territory at an all day meeting, and in the evening it will be host at a dinner. President Robert C. Hoffman expects that this will be the best dealer meeting his company has ever held.

Hays Double Seals



Approved by Underwriters' Laboratories



for Ever-tight Copper Pipe Connections

The Hays Method is Copper to Copper with no intermediate sealing agent to ever worry about. Make tight with a wrench—then forget them. Two perfect seals hold the pipe in a patented wedge grip that shock, vibration, repeated freezing and heat (up to 1800° C.) cannot loosen.

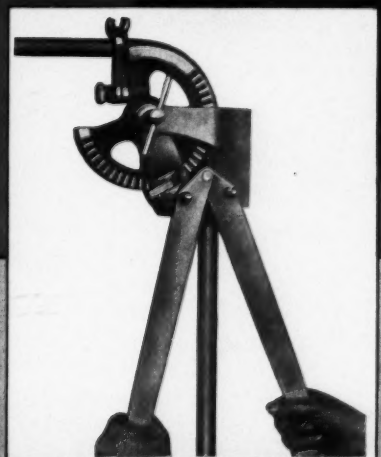
Use the mechanically strong Double Seal Connection wherever city gases, petroleum products, water or steam are to be copper piped. Its factor of strength is many times greater than will ever be required.

Let Hays Engineers help you with your copper piping problem. Send the coupon below to

HAYS MFG. CO., 1225 LIBERTY STREET, ERIE, PA.

Over 400 Styles and Sizes to Select from

Every Bend Saves a Fitting



The Hays Bending Machine

The Hays Bending Machine is designed to bend hard or soft tempered copper pipe easily, accurately and speedily. With the Hays Bender, any bend up to 180° can be made at any predetermined point on the pipe.

Smooth, even bends reduce friction in the line and save fittings. Write for details

Plumbing Brass
Bath Fixtures
Copper Plumbing
Gas Service Goods
Water Service Goods
Iron Products
Tapping Machines

Since 1869

HAYS

MANUFACTURER to WHOLESALER to PLUMBER

COUPON

HAYS MFG. CO.,
1225 Liberty Street,
ERIE, PA.

Gentlemen:

Send me complete information about Hays Double Seal Fittings.

Name _____

Address _____

City _____ State _____

FIRST WITH STAINLESS STEEL VALVES

FIRST WITH "COOL FEED VALVE" FEEDER

FIRST WITH WIPING ACTION HIGH VOLTAGE SWITCH

FIRST WITH "QUICK HOOK-UP"

FIRST WITH "FLOAT AND SYLPHON" CONSTRUCTION

FIRST WITH ALARM FEATURE AS STANDARD

FIRST WITH COMPLETE DATA BOOK

Has it Paid to "Do One Thing Well?"

We have stuck to one thing—boiler water level control—for ten crowded years. During those ten years we have been asked repeatedly, "when do you intend to *broaden* your line?"... and invariably the reply has been—"When and if we find it impossible to further perfect boiler water level control!"

Perhaps that time will never come... Ten years ago an automobile manufacturer headlined his advertisement. "The *final* achievement." He was sincere, no doubt, but today we are still seeing further achievement in automotive design!

Ten years ago we, too, were building good boiler water level controls. Then, and each time that we improved them since, we, too, have wondered if we hadn't struck upon the "*final* achievement."

But we have never said so, and we won't say so now. Now, as in the past, we propose to go right on "Doing One Thing Well," because the record of the years has convinced us that this policy has been responsible for bringing boiler protection and water level control into popular demand by the simple process of making available ever better and more dependable equipment.

Here, briefly, are a few of the more outstanding developments that "Doing One Thing Well" has contributed to Boiler Water Level Control during those ten years:—

1 The introduction of the "float and sylphon combination" in low water cut-off and feeder construction, eliminating stuffing boxes, packed joints and leakage.

2 The introduction of the cool feed valve feature—commonly known as the isolated feed valve—which eliminates lime and precipitate at the feed valve. This was a truly revolutionary development.

3 The introduction of stainless steel valves of file hardness that prolonged feeder life.

4 The development and introduction of the quick-hook-up feature (on the McDonnell No. 37 safety feeder and No. 38 Low Water Cut-off, No. 38 is now superseded by the No. 60 Low Water Cut-off).

5 The introduction of a large capacity strainer shipped in place ahead of the feed valve to prevent pipe cuttings and dope reaching the feed valve—a typical refinement.

6 The introduction of an alarm feature as standard equipment on No. 48 and No. 60 Low Water Cut-offs, and on No. 37-35 Safety Feeder-Cut-off Combination.

7 The introduction of an advanced high voltage switch with special wiping action and rugged construction which safely withstands rough handling such a switch receives.

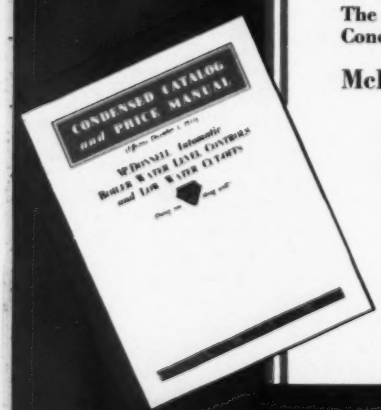
8 The introduction of the first complete "Data Book" showing hook-up drawings for feeders and cut-offs on all popular makes of boilers.

So there you have eight steps—all pioneering steps—that have more than justified the policy of "Doing One Thing Well." We could cite many more, but... the fact that many of these developments have been widely adopted in other makes of feeders and cut-offs is proof of recognized leadership.

What does this signify to you? Simply this: The organization that has led and is still leading is almost certain to have the latest and best equipment to do the job.

The latest evidence of McDonnell leadership is found in the *December* Condensed Catalog and Price Sheet. Write for it today.*

McDONNELL & MILLER, 1306 Wrigley Bldg., Chicago



McDONNELL
Boiler Water Level CONTROL

"Doing One Thing Well"

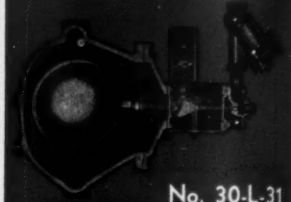
Here is one case where leadership does not exact a premium price. Despite their many plus features the price of McDonnell Equipment—type for type and size for size—is rarely higher often lower than other makes.

For AUTOMATIC JOBS

All good authorities now agree that a combined feeder and cut-off offer the only complete water level control for automatic jobs. Such units are the No. 37-35, 30-S-31 and 30-L-31 illustrated below. If protection alone without the added convenience is acceptable, and price is a ruling factor, the two most dependable and reasonable low water cut-off switches are the McDonnell No. 60 and No. 48.

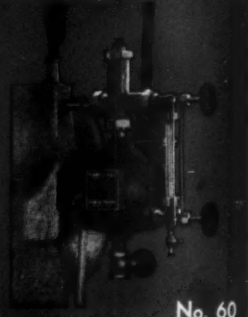
No. 37-35

Combined feeder and cut-off switch—For boilers up to 2500 Sq. Ft. Maximum Steam Pressure 15 pounds.



No. 30-L-31

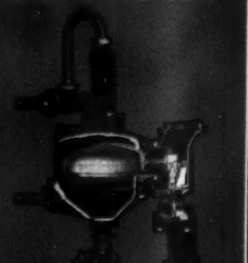
Combined feeder and cut-off switch—Maximum Steam Pressure, 25 pounds. Use No. 30-S-31 for boilers between 2500 and 5000 Sq. Ft. and No. 30-L-31 for larger boilers.



No. 60

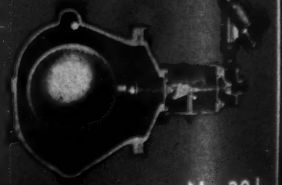
Low Water Cut-off with quick hook-up feature. Maximum Steam Pressure, 25 pounds. Especially recommended for round boilers and boilers that have the water glass in the first section. Use No. 48 for boilers that have independent water columns.

For HAND-FIRED JOBS



No. 37

For boilers up to 2500 Sq. Ft. Maximum Steam Pressure, 15 pounds.



No. 30-L

Max. Steam Pressure, 25 pounds. Use No. 30-S for boilers between 2500 and 5000 Sq. Ft. No. 30-L for boilers larger than 5000 Sq. Ft.

SUPPLY NEWS

Month's Developments among Manufacturers, Wholesalers and Salesmen in All Sections

Organize Submerged Water Heater Association of Chicago

Following the adoption of a code of fair competition for the submerged water heater manufacturers, the Chicago firms manufacturing these devices formed an organization on January 8 under the name of the Submerged Water Heater Association of Chicago, with the following officers: President, James W. Fettes of Parkinson Heater Company; vice-president, Lester Lange of Ferguson & Lange; secretary-treasurer, George Olson of Olson-Kehl Company. Adolph Johanson, with the above named officers, will constitute the members of the executive board. The association, which meets once a week, has adopted by-laws and appointed Hamlin Petty, 10 North Clark Street, as permanent secretary. Of the seventeen firms engaged in the manufacture of submerged water heaters in Chicago, fourteen are members of the association, as follows: Bell & Gossett, Ferguson & Lange, Olson-Kehl Co., Triad Mfg. Company, Accurate Boiler and Repair Company, Water Tube Boiler Company, General Heater Company, Parkinson Heater Company, Wolff Boiler Repair Company, Guaranteed Boiler and Welding Company, Grand Crossing Boiler Works, Carl Lindbeck Company, Johanson Water Heater Company, and Atlas Water Heater Company.

Youngstown Sheet & Tube Co. to Start Big Expansion

The Youngstown Sheet & Tube Company of Youngstown, Ohio, is planning to start at an early date to expand its electric weld mill at the Brier Hill plant to include production of small size pipe, according to President Frank Purnell. The estimated expenditures on the expansion will total about $500,000. The Brier Hill pipe mill now manufactures electric weld pipe in sizes from 18 to 26 inches. The new extension will permit manufacture of pipe from 16 inches down to 8⅝ inches, inclusive, including intermediate sizes. This will thus give the company a range in size of electric weld pipe from 8⅝ inches to 26 inches.

Announces Merger of One English and Two American Asbestos Companies

The Ambler Asbestos Shingle & Sheathing Company of Ambler, Pa., has been merged with the Keasbey & Mattison Company, also of Ambler, Pa., and a controlling interest in the latter company has been acquired by Turner & Newall, Ltd., of Great Britain, according to announcement just issued by A. S. Blagden, president of the American companies.

The Keasbey & Mattison Company was established in 1873, has extensive factories in Ambler, and owns and operates the Bell asbestos mines at Thetford Mines, Quebec. The Ambler Asbestos Shingle & Sheathing Company was incorporated in 1905 and has factories at both Ambler, Pa., and St. Louis, Mo.—Turner & Newall, Ltd., and its subsidiaries are also manufacturers of asbestos and also of magnesia products.

The enlarged business will retain the name of Keasbey & Mattison Company; American capital will continue to be largely represented, and the company will remain under American management, according to Mr. Blagden, who will continue as president.

Arthur R. Herske Made Vice President of American Radiator Co.

Arthur R. Herske, for the past three years sales promotion manager for the American Radiator and Standard Sanitary Corporation, has been appointed vice president and general manager of sales for the American Radiator Company, according to announcement just issued by Rolland J. Hamilton, president of the company. For two years before he became sales promotion manager for the parent corporation, Mr. Herske held the same position with the American Radiator Company.

Mr. Herske was born in Cleveland, Ohio, attended Western Reserve University and has been connected with the heating

Arthur R. Herske

industry for the past eight years, following 10 years of experience in other fields of business. Before assuming the position of sales promotion manager for the American Radiator Company, he was for three years secretary-manager of the Heating and Piping Contractors Cleveland Association, and in four weeks after he assumed office he increased the membership of the association from 9 to 120 contractors. Prior to that he was superintendent of power for the Willard

Storage Battery Company in Cleveland for five years, and while in that position he established radio station WTAM in Cleveland, now one of the largest radio stations in the United States.

In his work with the American Radiator Company Mr. Herske has built up a carefully organized sales promotion program based upon the theory that heating should be merchandised by telling "the story of comfort, convenience and cleanliness and not the story of cast iron" the need for which he declared, in a nation-wide radio address shortly after he assumed his position, constituted the chief need of the heating industry. To carry out this method of approach, he instituted regular seasonal campaigns on heating products, promoting different products at seasons of the year when their use would have the greatest appeal for the home or property owner.

The executive administration of sales for the American Radiator Company will continue to be under the direction of Martin J. Beirn, vice president.

Manhattan Master Plumbers Entertained by Johns-Manville

Members of the Manhattan Master Plumbers' Association were recently entertained by the Johns-Manville Insulation Department at Hans Jaegers, 85th Street and Lexington Avenue, New York City. Dinner was served for more than one hundred, following which officers and past officers of the Manhattan Association were introduced as follows: J. F. Heck, president; Herbert Smith, secretary; Herbert Halloran, vice president; Richard Anderson, past president; John D. Cooley, past president; Wm. Wallace, past president, and T. J. Cummins, past treasurer and the oldest association member.

The visomatic production "Uncovering Covering Profits" was shown. This is a combination of still pictures synchronized with a record, which tells the story of the products made by Johns-Manville for the plumbing and heating trade.

Following the talking film, a brief discussion was held on insulation specifications and special problems. Transite asbestos flue pipe for venting gas-fired equipment, a comparatively new product, was also described.

Johns-Manville was represented by C. G. Dandrow, assistant manager of power products and industrials in the New York district, and C. H. Hall, general manager of low pressure insulation, assisted by J. C. Kelleher, C. H. Hall, W. J. McBurnie, G. F. Habekotte and C. M. Stuve.

Central Western Wholesalers Association Holds Quarterly Meeting

The regular quarterly meeting of the Central Western Wholesalers Association was held Tuesday and Wednesday, January 16 and 17, at Fort Des Moines Hotel in Des Moines, Iowa.

In attendance were wholesalers from Duluth, Minneapolis and St. Paul for Minnesota, Omaha for Nebraska, Sioux Falls for South Dakota, and Sioux City, Fort Dodge, Dubuque, Cedar Rapids and Des Moines for Iowa.

The meeting was conducted for both days around a big table, no identification being needed, and most of those present were addressed by their first names, the finest spirit of friendliness, co-operation and comradery being in evidence, as they all "talked the same language" and all had the same problems and conditions.

All absences were accounted for and the illness of W. T. Cotter of Crane Co., Omaha; George E. Collins of Crane Co., Davenport, and F. Glick of Fisher Supply Company, Marshalltown, were reported and recorded.

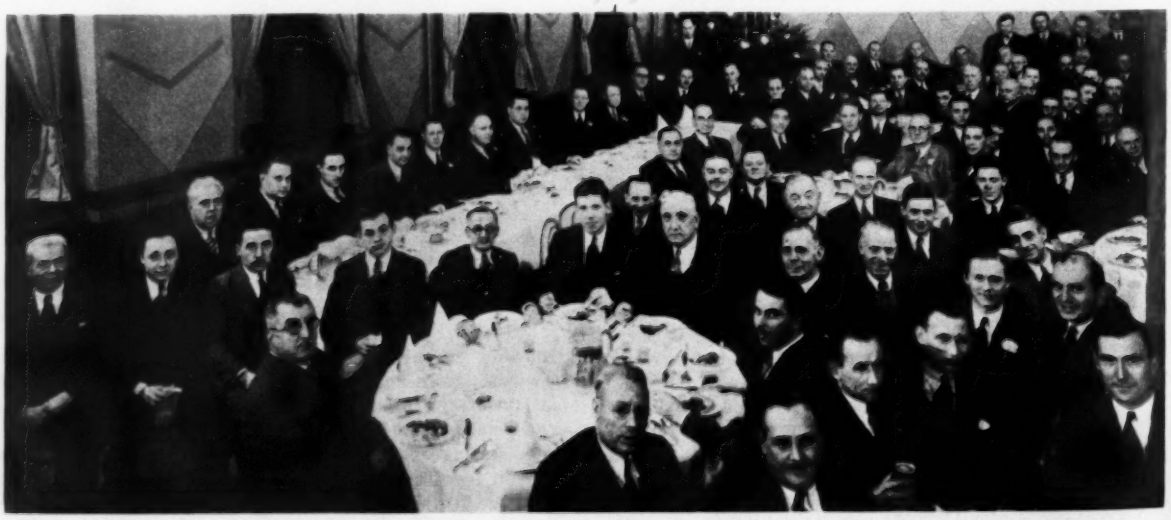
Telegrams from F. W. Swanson, the association's official representative on the joint National Committee, now in Washington, were received on the status of the plumbing fixture manufacturers' and wholesalers' code, and telegrams were sent to him from the association commending him for his efficient work in behalf of wholesalers in the preparation and presentation of the wholesalers' code.

Among the topics discussed were manufacturers' resale on various articles, and plans for a minimum weight for freight allowance.

Claims for damages for alleged defects in plumbers' brass, faucets, etc., as recently made by some of the members was also discussed, and it was recommended that such claims, while undoubtedly without liability, should be covered by liability insurance and referred to the insurance companies accordingly.

VALVE AND FITTINGS CODE: Wholesalers opposed to terms of sale and particularly the twice-a-month cash discount requirement. Resolutions opposing such were offered and adopted, with instructions to take such steps as may be necessary for filing application for amendment to the code on this point and seek co-operation of other wholesalers' associations.

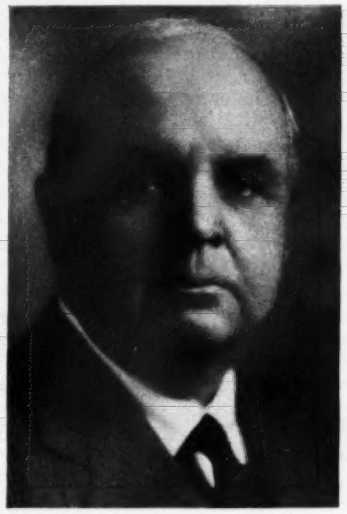
Request for quotations reported from some State and Municipal Purchasing Agents for definite future period. This



Manhattan Master Plumbers entertained by the Insulation Department of Johns-Manville, New York City

was declared to be contrary to some codes and the matter is to be investigated further.

SHOW ROOM DISCOUNTS: Wholesalers opposed to allowance of show-room discounts on face of invoice as encouraging



E. I. Leighton, President of Central Western Wholesalers Association

using such items for installation, and recommending allowance of such only for a twelve-months period payable at the end of period, if fixtures were on display the whole time, to be allowed through the wholesaler.

LAVISH ENTERTAINMENT recently conducted by some manufacturers in conducting meetings for master plumbers, etc., was condemned for other than casual and reasonably ordinary entertainment, and when such is in violation of existing codes, or those as approved in future, such should be reported.

DISCRIMINATION IN PRICES BY MANUFACTURERS issuing several price lists likewise considered as contrary to spirit of codes, and such cases are to be investigated and complaint made with Code Authority as and when they occur.

DIVISION OF GROSS DOLLAR MARGIN between wholesaler and retailer-contractor discussed, with various views presented. Committee appointed to make further study and recommendations for adoption and presentation to various manufacturers in the industry.

ADVERTISING AGENCY PLAN to work with women's church organizations for purchases from local merchants of manufacturers' product listed in advertising agency catalogue, was reported and discussed, and plans recommended to combat this practice and work through local chamber of commerce and similar organizations, as contrary to the best interests of the industry.

SALESMEN'S COMPENSATION: Methods in vogue by various wholesalers for compensating salesmen were discussed, with further consideration and study to be made for the best interests of wholesalers and salesmen.

JOINT NATIONAL COMMITTEE representation and the need for such was stressed, with commendation of good work done by Mr. Swanson therein, and recommendations for assessment, if any necessary, to carry on the good work in the interests of the wholesalers.

ELECTION OF PERMANENT OFFICERS

E. I. Leighton of Leighton Supply Co., Fort Dodge, Iowa, was elected president unanimously without any other nominations.

H. L. Dempster, Dempster Mill Mfg. Co., Beatrice, Nebr.,

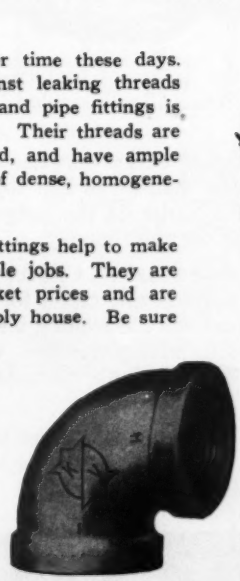
Tight on the first test

YOU can't afford make-over time these days. Your best insurance against leaking threads or faulty operation of valves and pipe fittings is to use Kennedys on every job. Their threads are clean, sharp, accurately aligned, and have ample chamfer, and their bodies are of dense, homogeneous, perfect metal.

Kennedy Valves and Pipe Fittings help to make speedy, creditable and profitable jobs. They are always sold at standard market prices and are obtainable from your local supply house. Be sure to insist on them.

Send for the Kennedy Catalog

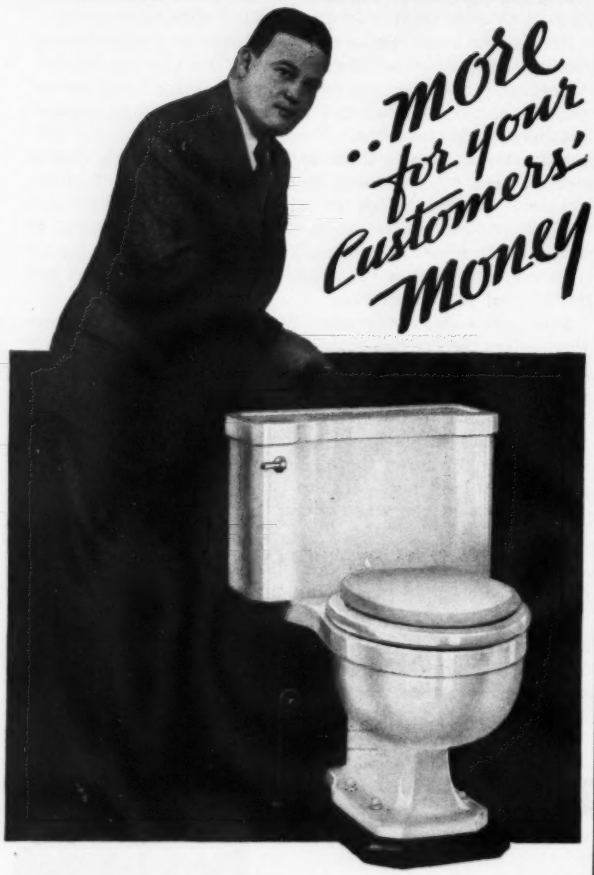
The Kennedy Valve Mfg. Co.
Elmira, N. Y.



KENNEDY VALVES AND PIPE FITTINGS

CLIMAX

..CLOSE-COUPLED..



YOUR customers want the fixture of tomorrow at today's price . . . and Climax Close-Coupled offers precisely that.

Here is a low, trim, free-standing closet that has style . . . and is quiet. For twelve months it has topped dealers' sales—proved itself a leader on the judgment of home owners who get most for their money.

As a replacement unit in close quarters, Climax wins . . . it's a space saver. As a harmonizing factor for new building—for good taste, good color matching and all around refinement, Climax again wins preference. Contractors find Climax easy to sell in both markets . . . and satisfactory when sold.

More for your customers' money means more profit to you . . . and more often. See your jobber or write us for the "Inside Story of Climax."

UNIT-CAST

UNIVERSAL SANITARY

MANUFACTURING CO. NEW CASTLE, PA.

and P. J. Frey, Central Supply Co., Minneapolis, Minn., were elected vice presidents. D. R. Thomas, Minneapolis, Minn., was elected secretary-treasurer.

Executive Committee and Local Code Committees: Minnesota: O. R. Manners, Manners-Motz Co., St. Paul; E. E. Roberts, Roberts-Hamilton Co., Minneapolis; A. B. Anderson, Duluth Plbg. Supplies Co., Duluth.—Nebraska: W. T. Cotter, Crane Co., Omaha; H. J. Bailey, Baker Mfg. Co., Omaha.—South Dakota: E. A. Hodgson, Crane Co., Sioux Falls.—Iowa: J. M. McDonald, Jr., A. Y. McDonald Mfg. Co., Dubuque; Bernard Kurtz, L. H. Kurtz Co., Des Moines.—Member at large: F. W. Swanson, Globe Mach. & Supply Co., Des Moines, ex-officio as official representative on Joint National Committee.

The next meeting will be held in February or March either in Minneapolis or in St. Paul, and thereafter at Omaha, all quarterly meetings rotating in Iowa, Minnesota and Nebraska, and monthly divisional meetings in each unit. Wisconsin wholesalers at Eau Claire and LaCrosse are included in the Minnesota unit.

American Radiator Co. May Reopen Bayonne Plant

That there is a possibility for the opening of the American Radiator Company's plant at Bayonne, N. J., some time during the coming spring is indicated in a statement which was recently issued by President Rolland J. Hamilton, as follows: "The Bayonne, N. J., plant of the American Radiator Company has been closed some months. Certain city officials of Bayonne and a committee of workmen have solicited the good offices of the National Labor Board at Washington to take up with the company the matter of reopening the plant. A meeting to this end was recently held and the company has expressed the hope that the condition of the building industry will be such that the plant can be reopened sometime this spring."

Midwest Mfg. Corp. Moves to Richmond, Ind.

Midwest Manufacturing Corporation, manufacturer of malleable iron fittings and plumbers' iron specialties, has moved its plant from 1416 Nevada Street, Fort Wayne, Ind., to 110 West Main Street, Richmond, Ind.

J. D. Johnson Co. Centralizes Its Business in Philadelphia

J. D. Johnson Company, Inc., for the past 45 years located at 139-43 North Seventh Street in Philadelphia, Pa., has moved its office and warehouse to its building at Seventh Street and Glenwood Avenue in that city where the company's heavy and bulk material has already been the last eighteen years.

Busser Supply Co. Is the New Name

The plumbing and heating supply concern of J. F. Reber & Company at Lewisburg, Pa., has been incorporated under the name of the Busser Supply Co. The personnel is practically the same as heretofore. The officers are: W. J. Busser, Jr., president and treasurer; Alvesta R. Busser, vice president and secretary, and Clair Groover, director.

Have Moved to Long Island City

Fords Porcelain Works, Perth Amboy, N. J., announce the removal of their New York City offices and show-rooms from 103 Park Avenue to 2509 42nd Road, Long Island City, N. Y.

Northern Indiana Brass Co's. Twenty-Ninth Annual Banquet

The Northern Indiana Brass Company of Elkhart, Ind., held its twenty-ninth annual banquet in the Empire Room at Hotel Elkhart in that city on Friday evening, December 29. Everything in connection with these affairs is planned and carried out by the employees of this company. This is a noteworthy fact because they have developed into something very elaborate, including as they do an excellent dinner and speeches, musical entertainment, the production of a play, and dancing.

The toastmaster of the evening was Arthur Nelson, who has been connected with the company since 1925, and the speakers were the following officers of the company: President Ross Martin, Vice President and Superintendent A. C. Arbogast and Vice President M. R. Jackson.

The performance of "Lydia's Wedding," a play with fourteen characters, was a fine success and proved very enjoyable.

Following the play, dancing was in order, music being furnished by four of the employees.

The guests of the evening were: Mr. and Mrs. Howard Crum, Jr., Mr. and Mrs. Perry Grieb, and Thomas Parker.

The entertainment committee, which did such excellent work, was composed of Ralph Thorp, chairman; Fay Wood, George Kehres and Chester English.

Appointed General Sales Manager of Utica Radiator Corp.

Carl A. Sawade

W. C. Murray, vice president and treasurer of the Utica Radiator Corporation of Utica, N. Y., has announced the appointment of Carl A. Sawade as general manager of sales for this concern. For the past year Mr. Sawade has been vice president and general manager of the Lincoln-Niagara Corporation. Previous to that he was assistant general manager of sales of the National Radiator Corporation, having been connected with that company since its organization in 1927. Before that he was general manager of sales for the Continental Heater Corporation, one of the six companies which were consolidated under the name of the National Radiator Corporation. Mr. Sawade has been connected with the heating industry for the past twenty years, during which time most of his efforts have been devoted to sales and advertising.

Opens New Supply Business in New York City

Sidney Samuels, Inc., is the name of a new concern which has opened a plumbing and heating supply business at 146 West 99th Street, New York City. At the head of this new venture is S. Samuels, who was formerly connected with the United Plumbers Supply Co. of New York City.

Now the Thrift Range Heater Co.

The Universal Boiler & Radiator Company of 1365 Broadway, New York City, has been purchased by Messrs. Cunningham and Donahue, who have changed the name of the company to the Thrift Range Heater Co. and have moved the business to 677 Montgomery Street, Jersey City, N. J. The business is in charge of Mr. Donahue.

FITTINGS

Whatever your requirements, you'll find in Jarecki Fittings just what you seek to assure a speedy, successful job — MALLEABLE Fittings made from *air-furnace* malleable and therefore free from the imperfections inherent in cupola-melting; CAST-IRON Fittings that are unusually dense and close-grained—all fitted with accurate, clean-cut threads and all so thoroughly inspected before shipment that only perfect specimens reach the job. Write for name of nearest distributor.

Jarecki
MANUFACTURING COMPANY
ERIE, PA., U. S. A.

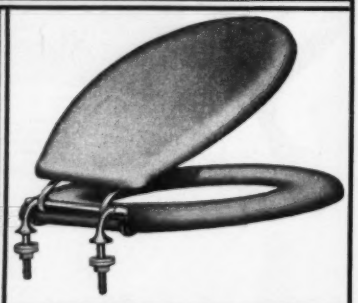
No. 1716
Open Front for
Staple Bowl
Made from 1¼
in. Stock

•

No. 1616
For Staple
Bowl
Oak Mahogany
White
Plain Colors

Celluloid Sheet
White
Plain Colors
Mother of Pearl

•



Sell
American
SEATS

THE quality which has been characteristic of American Products in the past . . . the goodwill and reputation which have been built by their performance . . . the profits which go to American dealers are still ever present in the American Seat line. Sell American in 1934 for greater satisfaction and greater profit.

•

AMERICAN SEAT & TANK CO.
GRAND HAVEN, MICHIGAN

Sales Office
ABINGDON, ILLINOIS

Business Personals

DAVID SHERWOOD, son of William Sherwood, president of the Sherwood Brass Works of Detroit, Mich., has been elected secretary and treasurer of this concern, succeeding A. L. Waltensperger, who died just before Christmas. Mr. Sherwood has been active in the operation of this company for some time.

IRA HODES, who has been a manufacturer's representative in the plumbing supply field since 1915, has just been appointed eastern sales representative for the Milwaukee Flush Valve Company of Milwaukee, Wis., and the Youngstown Pressed Steel Company of Warren, Ohio. He will make his headquarters at 846 Chrysler Building, New York City. Mr. Hodes saw service in the infantry in the World War and was made a captain. He was wounded twice while in active service.

D. FALK has been appointed sales representative in Westchester and Putnam counties, N. Y., and in Fairfield county, Conn., for the Spencer Heater Company of Williamsport, Pa. Mr. Falk has been associated with the New York City office of the Spencer Heater Company for the last two years.

D. Falk

RICHMOND SEABURY has been appointed sales representative for the Jas. P. March Corporation of Chicago on its line of gauges, industrial instruments, valves and vents. Mr. Seabury will make his headquarters at 1 Orchard Street, Wellesley Hills, Mass.

GUSTAV C. BECHER, long connected with the hot water equipment field, is now located at 551 Fifth Avenue, New York City, and is representing the following companies in the New York City metropolitan area: Stahot Heater Corp. of Brooklyn, N. Y.; Kitson Company, Philadelphia; Jas. P. Marsh Corp., Chicago; Standard Thermometer, Inc., of Boston, Mass., and Buffalo Nipple & Machine Co., Inc., of Buffalo, N. Y.

J. B. DURKEE has been appointed manager of the Houston, Texas, office of the A. M. Byers Company of Pittsburgh, Pa., according to announcement just issued by M. J. Czarniecki, general manager of sales. Mr. Durkee formerly represented the company in Houston territory and more recently has been stationed in Tulsa, Okla. He succeeds H. B. Weathersby, who died recently from injuries received in an automobile accident.

CLIFFORD R. KNIGHT of Slingerlands, N. Y., has been appointed sales representative for the Essex Foundry of Newark, N. J., to cover Albany, N. Y., and all points west of Albany in New York State.

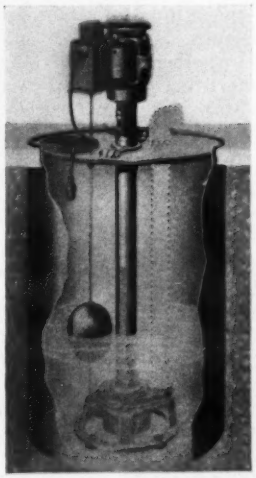
FRED A. PRATT of Atlanta, Ga., has been appointed southern representative for the Barrett line of products of the Cleveland Brass Manufacturing Company of Cleveland, Ohio. Mr. Pratt is also southern representative for J. B. Wise, Inc., of Watertown, N. Y., and the Central Foundry Company of New York City.

ROBERT L. VAN SICLEN, assistant manager of the Brooklyn branch of J. D. Johnson Co., Inc., 271 Atlantic Avenue, Brooklyn, N. Y., will do all the buying for this concern for the metropolitan area, according to announcement issued by President T. Arthur Johnson.

NEW STORE·SHOP and JOB ITEMS

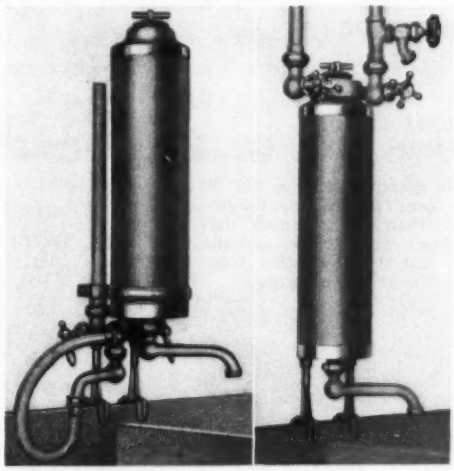
Centrifugal Type Cellar Drainer

Here is a unit which has been placed on the market for draining cellars, boiler rooms, elevator pits, and the like. It is described as an improvement over older equipment. The pump is of the centrifugal type with an open impeller described as being non-clogging. The shaft is made of stainless steel and is supported at both ends by bearings. The support column is 1½ in. pipe. The strainer is designed to prevent foreign matter from entering the pump. The holes equal in area 14 times that of the suction opening. An extension cord consisting of 12 ft. of rubber covered cord is provided for plugging into an electrical connection. A sump cover made to fit 18 in. tile is available. The motor has a ¼ H. P. rating and it is of the universal type with a moisture-proof winding suitable for all cycles of alternating current and direct current, 110-120 volt. A 220 volt motor can be obtained. The Deming Company, located at Salem, Ohio, is the manufacturer.



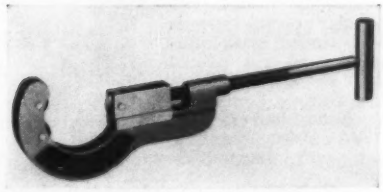
A Water Softening Unit

Here is a water softening unit which has been just recently placed on the market as a home appliance. The unit is designed for cities and sections having average hardness in the water and not for extremely hard water sections. It is pointed out that the former comprises 75 per cent of the country including such sections as Chicago and Milwaukee. The accompanying illustrations show two models. One is described as being a permanent installation connected directly to a water system. It is designed to perform all of the functions of a laundry tray fixture delivering hot or cold, as well as temperate soft water. The swing spout delivers water to either tray. The second unit is designed for installations where it is desired to make use of the old laundry tray fixture. It can be removed when desired. In performance this unit is identical with the permanent model. Regeneration is accomplished by flushing common table salt through the unit. The Sudsmore Company, located at 111 E. Lapham St., Milwaukee, Wis., is the manufacturer.



Three Wheel Cutter

The wheel cutter which is illustrated here has been placed on the market as a precision tool which is described as having frames which are surface-ground to establish true parallel working surfaces as the foundation to subsequent



machining operations. The parts are built at right angles to each other to insure tracking. The wheels are described as being standard. Its size range is listed as being from 2½

Economical and Accurate Service *with Any Type of Fixture*

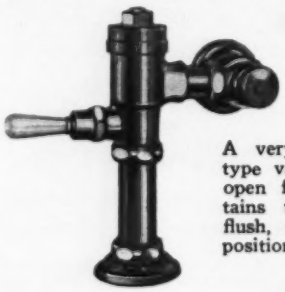
Watrous

FLUSH VALVES

IN all Watrous flush valves the length of flush is regulated with absolute precision according to the needs of the fixture. Outside adjustment, without turning off the water. No water-waste is possible. The by-pass is cleansed at every flush—a sure safeguard against obstruction.

MAJESTIC FLUSH VALVE

This diaphragm type has 25 per cent greater diaphragm-area than the ordinary diaphragm-valve. This, and the full waterway, prevent trouble under low pressures.



IMPERIAL FLUSH VALVE

A very dependable piston type valve. Has non-hold-open feature, which maintains the same length of flush, no matter what the position of the handle.

JEWEL FLUSH VALVE

This popular piston-type is the valve installed in all comfort stations of the official buildings at the Chicago World's Fair. James B. Clow & Sons, jobbers, and the J. W. Holt Plumbing Co., contractors, directed installation.

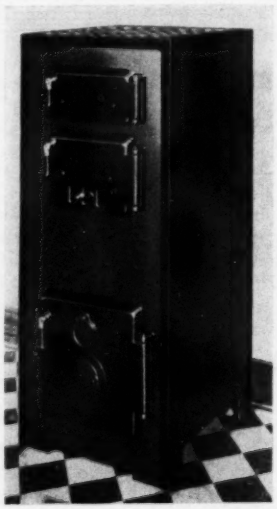
Write for Plumbing Catalog No. 433

IMPERIAL BRASS MFG. CO.
1231 West Harrison St., CHICAGO

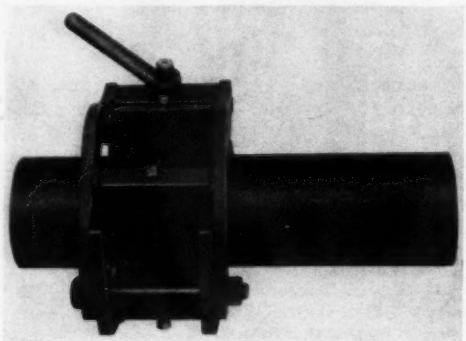
to 4 in. The manufacturer is The Borden Company, located at Warren, Ohio.

Unit for Hot Water Heating

This new type of boiler has been placed on the market just recently for use in small homes or buildings which are



equipped either with or without cellars. It is for use in connection with a hot water radiator heating system. Although no cellar is required for this equipment, the boiler can be installed in the basement if desired. It is described as being equipped for completely automatic regulation. It can be furnished with a circulating jacket for room heating when it is installed in the living quarters, or it can be obtained with a fully insulated jacket. American Radiator Company, 40 West 40th Street, New York, N. Y., makes it.



A Pipe Welding Clamp

The device shown in the accompanying illustration is an adjustable clamp designed for all sizes of pipe, within its range. It is made in 2 ranges, one from 4 in. to 6 in. and the other from 8 in. to 12 in. One lever controls the action of the clamp. It automatically centers the two lengths of pipe to be welded and adjustable screw spacers keep them the correct distance apart. The open construction of the clamp is designed to leave a large amount of space for tacking. Oster-Williams, 2057 E. 61st Place, Cleveland, Ohio, is the manufacturer.

Quaker City Jobbers Hold Annual Banquet

The Quaker City Jobbers' Association of Philadelphia, Pa., held its annual banquet December 20 at the Sylvania Hotel in that city with a good attendance.

President Conrad Muhly gave a short talk on business conditions and the outlook for 1934 from an association standpoint. Past President David Schrull followed with a brief history of the association and its progress. The committee in charge of the affair consisted of Joseph Weinstein, chairman; H. Kuehner, Jack Gross and Al Lentz.

New Year's Eve Party of Sam S. Glauber, Inc.

The annual New Year's Eve party of Sam S. Glauber, Inc., 515-29 East 79th Street, New York City, was held on Saturday afternoon, December 30, and was attended by manufacturers, master plumbers and employes, numbering more than 200. The festivities started at noon and lasted until 6 o'clock. Among those in attendance were: Donald M. Forgan and John G. Barnum, vice-presidents of the American Radiator Co.; Lee Kelley of Standard Sanitary Mfg. Co., A. N. French of Kohler Co., John Stuve of Johns-Manville, Max Falk of Republic Brass Co., Glenn Van Buren of the Jobbers Credit Association, J. F. Murphy, vice-president of Sloan Valve Co., Dan Reinhardsen of Spencer Heater Co., J. L. Stulsaft, and more than one hundred master plumbers and nearly 40 Glauber employes.

A. L. Waltensperger

A. L. Waltensperger

A. L. Waltensperger, secretary and treasurer of Sherwood Brass Works in Detroit, Mich., died at his home in that city on Saturday, December 23, of heart trouble. Mr. Waltensperger was born in Detroit September 29, 1875, and received his education in the schools of that city. After learning the plumbing trade he formed a partnership with John S. Irvine, who later became president of the National Association of Master Plumbers, and opened a plumbing business under the name of Irvine & Waltensperger. This partnership lasted until 1900, when Mr. Waltensperger purchased Mr. Irvine's interest and continued the business until 1903, when he became associated with William Sherwood and helped to organize the Sherwood Brass Works, of which he was secretary and treasurer from its foundation and until his death. Mr. Waltensperger was a member of the Detroit Athletic Club, the Detroit Boat Club, and the Masonic fraternity. His wife, a son and two daughters survive him.

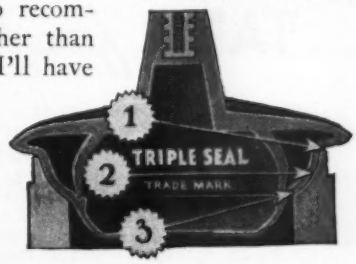
George W. Fisher

George W. Fisher, vice president and sales manager of Fisher Brass, Inc., at Marysville, Ohio, died Friday morning, January 5, in New York City, where he was spending a few days on business. Mr. Fisher suffered a stroke late Thursday afternoon and died early the next morning. Mr. Fisher had been connected with the brass industry in Cleveland and Marysville, Ohio, for many years. He spent most of his time in travel for Fisher Brass, Inc., of which his brother, Sidney L. Fisher, is president. He is also survived by two other brothers.

"Can You Stop that GURGLE?"

she asks me

"Can I? says I. Miss, I don't believe there's a leak yet invented that this Triple Seal tank ball won't stop. I've seen it stop gurgles and cut down water bills too many times. . . . . Oh, yes, Miss, there are cheaper flush balls, but I think too much of your good will to recommend any ball other than the Triple Seal. I'll have that noise and that leak fixed for good, as quick as you can say Jack Robinson."



TRIPLE SEAL IS GUARANTEED 4 YEARS

This patented tank ball forms a watertight seal in three places on the valve seat: (1) over the upper edge, (2) against the side wall, (3) against the lower edge. It's 94% pure, live rubber and will not swell or lose its shape. GUARANTEED FOUR YEARS. The standard size Triple Seal Ball fits all flush valves up to 2¾ inches. An oversize Triple Seal takes care of the larger sizes. Your jobber can take care of your requirements.

RADIATOR SPECIALTY COMPANY

Charlotte, N. C. Los Angeles, Calif. Toronto, Canada

Also Manufacturers of BOILER SOLDER SEAL, and WJ BOILER & HEATING SYSTEM CLEANSER

NEW AND IMPROVED
TRIPLE SEAL
TANK BALL

It's a KOVEN Product

Your customer expects you to pick the **BEST TANK** *for him!*

The plumber knows that when he is asked to supply and install a tank—he is expected to be the judge in picking the kind of a tank that will give the best service.

The plumber also knows that the Koven organization has produced tanks that are quality both from the standpoint of material and labor. Only the best of material and a knowledge gained by years of experience have made it harder to compete with a Koven product than to sell one.

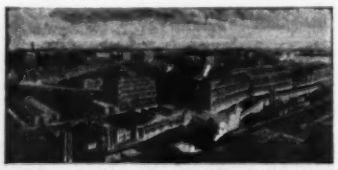
RANGE BOILER
Galvanized or Copper
SCULLERY SINKS
BARBER BOILERS
KOVEN-PARACOIL TANKS

NRA WE DO OUR PART

STORAGE TANKS
Steel or Copper
FUEL OIL TANKS
EXPANSION TANKS
SEPTIC TANKS

Insist on the best by asking for Koven products from your jobber.

Send for new Plumbers' Hand Book



L.O. KOVEN & BRO. INC.
JERSEY CITY, N.J.

The Old Metal Market

New York

(Dealers' Buying Prices, Cents a Pound)

No. 1 Heavy copper and wire	6.12½	to	6.25
Light copper	5.25	to	5.50
Heavy yellow brass	3.50	to	3.75
Clean light brass	3.00	to	3.25
New brass clippings	4.75	to	5.00
Zinc	2.25	to	2.50
Aluminum turnings, borings	4.75	to	5.00

Pittsburgh

Crucible copper	6.12½	to	6.25
Heavy copper and wire	5.50	to	5.75
Light copper	5.12½	to	5.37½
Red brass (No. 1 Comp.)	5.00	to	5.12½
New brass clippings	4.62½	to	4.87½
Cocks and faucets	3.37½	to	3.50

Cincinnati

Crucible copper	6.00	to	6.25
Heavy copper and wire	5.75	to	6.00
Light copper	5.00	to	5.25
Red brass	5.00	to	5.25
Heavy yellow brass	3.25	to	3.50
Light brass	2.50	to	3.00
New brass clippings	5.00	to	5.25
Scrap zinc	2.00	to	2.25
Block tin	40.00	to	42.00

Cleveland

Crucible copper	6.25	to	6.50
Heavy copper and wire	5.50	to	5.75
Light copper	5.00	to	5.25
No. 1 Composition red brass	5.00	to	5.25
Heavy yellow brass	3.50	to	3.75
Light brass	3.00	to	3.25
New brass clippings	5.00	to	5.25
Cocks and faucets	4.00	to	4.25
Zinc	2.25	to	2.50
Block tin pipe	40.00	to	43.00
Solder joints (close cut)	6.00	to	6.50

Chicago

No. 1 Heavy copper and wire	5.87½	to	6.25
No. 2 Heavy copper and wire	5.25	to	5.75
Light copper	4.75	to	5.00
No. 1 Composition red brass	4.00	to	4.50
Heavy yellow brass	3.37½	to	3.62½
Light brass	2.75	to	3.00
New brass clippings	4.75	to	5.00
Cocks and faucets	3.75	to	4.00
Old zinc	2.12½	to	2.37½
Solder joints (close cut)	4.50	to	5.00
Block tin pipe	36.00	to	38.00

St. Louis

Crucible copper	5.75	to	6.00
Heavy copper and wire	5.50	to	5.75
Light copper	4.50	to	4.75
No. 1 Composition red brass	4.50	to	4.75
Light brass	3.00	to	3.25
New brass clippings	4.50	to	4.75
Zinc	2.25	to	2.50
Block tin pipe	45.00	to	46.00
Solder joints (close cut)	6.50	to	7.00

Detroit

Crucible copper	6.25	to	6.50
No. 1 Heavy copper and wire	6.00	to	6.25
Light copper	4.75	to	5.00
Red brass (No. 1 comp.)	4.75	to	5.00
Heavy yellow brass	3.50	to	3.75

THE TRADE

News of what plumbing and heating contractors are doing the country over

Washington, D. C., Selected as 1934 Convention City

President Robert J. Barrett has announced the selection of Washington, D. C., for the holding of the fifty-second annual Convention and Exposition of the National Association of Master Plumbers. This action is officially taken by virtue of the authority of the fifty-first National Convention held in New Orleans, Louisiana, in June, 1933, which assembly instructed the National President to select the convention city for 1934.

In announcing the selection of Washington, D. C., for the 1934 National Convention, President Barrett made the following statement:

There were five principal considerations which influenced my decision in selecting Washington, D. C.—

1. Washington has not had a National Convention since 1892—over forty years ago. All during this period our local association has steadily held a membership in the National Association. For several years our members have been very anxious to have a national convention in our city.

2. With the present facilities of our National Office in Washington, and with our personnel and organization completed, I am sure that the administration can be carried on more economically than in any other city.

3. The eyes of the world, to say nothing of the United States, are on Washington. There will be a tremendous advantage to us as an industry in making our Government, "Plumbing Conscious."

4. Washington, D. C., offers exhibitors great potential returns. With a liberal percentage of the population classified as transients, visitors to our Exhibit will embrace residents of every state in the Union.

5. A charming city, one of the world's most beautiful capitals, Washington affords the visitor a wide variety of practical education and interesting entertainment.

Convention dates, convention and exposition location, headquarters hotel, etc. have only been tentatively selected. Definite announcements concerning these will be announced at an early date.

At the insistent request of his many friends in Washington, President Barrett finally consented to direct the convention and exposition as general chairman of the Convention and Exhibition Committee that is now being formed.

Pennsylvania Master Plumbers Hold Mid-Winter Meeting

The Pennsylvania State Association of Master Plumbers is holding its annual mid-winter meeting at the Penn-Harris Hotel in Harrisburg, Pa., on January 31, while this issue of DOMESTIC ENGINEERING is being printed. The officers of the association are: President Wm. A. Schneider of Scranton, Vice President James Simmons of York, and Secretary-Treasurer James H. Lally of Olyphant, Pa.

New York State Plumbers Will Meet in New York City

The New York State Association of Master Plumbers will hold its annual convention in New York City on April 16, 17 and 18. The Hotel Pennsylvania has been selected as headquarters, and all sessions will be held in the convention hall of that hotel. The 9,000 square feet of exhibit space on the roof garden will be utilized for exhibits of plumbing and heating material. Jacob Stockinger, Jr., president of the Queens Borough Association of the Greater New York Association of Master Plumbers, has been appointed chairman of the convention committee.

Massachusetts Master Plumbers Select April 10

The Massachusetts State Association of Master Plumbers will hold its annual convention April 10 in Boston, Mass., with headquarters at the Copley-Plaza Hotel, according to announcement issued by Secretary John J. Downey of West Roxbury, Mass.

Minnesota Association Convenes in St. Paul

The Minnesota Master Plumbers' Association will hold its 40th annual convention on February 6 at the St Paul Hotel, St. Paul, Minn., according to announcement issued by President H. M. Porter of Minneapolis. The other officers of the association are: First Vice President A. E. Wickworth, St. Paul; Second Vice President A. F. Cherne, Eveleth; Secretary E. A. Lamb, Minneapolis, and Treasurer F. C. Stiller, Minneapolis.

W. Va. Master Plumbers Plan Charleston Meeting

The Master Plumbers' Association of West Virginia will hold its annual convention at the Kanawha Hotel in Charleston, W. Va., on Monday and Tuesday, February 5 and 6. In emphasizing the importance of attending this convention, Secretary C. V. Swann of Huntington, in the official call to all the members, writes: "This is a great educational opportunity for those who attend with an open mind, a willingness to learn and an unselfish desire to give and receive information."

Arkansas Chooses Little Rock for Convention

The Arkansas State Master Plumbers' Association will hold its annual convention on Monday, March 26, in Little Rock, Ark., with headquarters at the McGehee Hotel, according to official notice just issued by Secretary Jos. H. Bilheimer of Little Rock, Ark.

Montana Plumbers Will Meet at Miles City

The Montana Master Plumbers' Association will hold its annual convention May 28 and 29 at Miles City, Mont., according to the official call just issued by Secretary Thomas E. Luebben of Dillon, Mont.

Philadelphia Master Plumbers Elect Officers

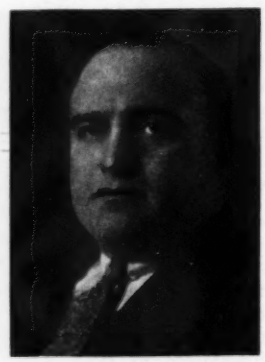
The Master Plumbers' Association of Philadelphia, Pa., held its annual meeting January 4 and elected the following officers: President, George M. Hicks, re-elected; vice presidents: Harry L. Stilwell, Sr., Walter Raid, Howard Neilson, Edward Quaid and Wm. Boal; secretary, Robert H. Pflug-Felder; treasurer, George Moeller; sergeant-at-arms, Elvin H. Mackey; board of directors; Harry L. Righter, George F. Uber, Philip Hering, Chas. A. Rapp, James Soehle and John Nagele.

Kings County Master Plumbers Install New Officers

The Kings County Master Plumbers Association, Inc., of Brooklyn, N. Y., held its installation of officers in conjunction with a dance at Sonia Hall in that city on Wednesday evening, January 3, with approximately 400 in attendance, including master plumbers and their wives, and manufacturers and wholesalers.

Joseph Byrne, a well known attorney of Brooklyn, officiated at the installation ceremony. The following officers

Alex Rotker
President



A. A. Kline
Treasurer

were installed: President, Alex Rotker; vice president, A. Olson; treasurer, A. A. Kline; recording secretary, L. Friedman; financial secretary, L. Molinari; sergeant-at-arms, A. Terra; board of governors: T. Constantino, L. Rushwald, A. Feldman, M. Grossman, A. Hall, R. Glickman, H. Walker and H. Funt; board of trustees: F. Cappuccio, M. Grand, S. Weithorn, H. Rosenbluth and B. Posner.

Atlantic City Plumbers Elect Officers

The Master Plumbers' Association of Atlantic City, N. J., Inc., held its annual meeting on Tuesday evening, December 26, and elected the following officers: President, Benjamin E. Labov; vice president, Frederick Sharkey; secretary-treasurer, Norris Gaskill; trustees; David H. Moore, Harry Moore and Thomas A. Devine. President Labov, who was reelected, reported a 33 per cent increase in membership during the year 1933, and that the association is trying to have plumbing code of Atlantic City revised.

Manhattan Master Plumbers Entertained at Smoker

The E. Smolka Plumbing Supply Co., Inc., 231-233 East Thirty-third Street, New York City, entertained the Master Plumbers' Association of Manhattan at a smoker held at 136 East 30th Street on Wednesday evening, January 17. This was the second annual event of its kind that the Smolka company has tendered to the master plumbers, and it was a most pleasant success. Mortimer Smolka was master of ceremonies and filled the role to perfection.

Jersey City Master Plumbers' Banquet Scheduled for Feb. 10

The Master Plumbers' Association of Jersey City, N. J., will hold its annual banquet on Saturday evening, February 10, at the Elks Club, 2857 Hudson Boulevard, in that city. The committee of arrangement is sparing no effort to make this event a splendid success. This committee is composed as follows: Louis S. Komoski, chairman, 113 Van Winkle Avenue, Jersey City; George Cooper, ex officio; Edmund P. Ingram, John J. Corcoran, Richard Entwistle, James T. Breman, John T. Edge, John A. Ward, Wm. T. Bailey, James J. Conlin, Joseph Schneiderman, Harry P. Sharrack, Abraham M. Aronson, Louis C. Kull, Harry J. Wasserman, Jr., John J. Crosby, Joseph A. Reilly, Anthony A. Marzullo, Wm. F. Mulholland and J. Albert Freeman.

Oklahoma City Master Plumbers Elect Officers

The Oklahoma City Association of Master Plumbers held its annual meeting recently and elected the following officers for the year 1934: President, Walter M. Reeves; vice president, A. M. Bateman; treasurer, S. G. Russell; board of directors: John L. Swafford, A. M. Bateman, A. H. Moore, John Leder, Henry Kaiser, O. K. Griggs and Walter M. Reeves; board of trustees: L. H. Helsel, R. M. Wolfe and R. E. Standiford.

Iowa Master Plumbers Will Meet at Waterloo

The Iowa Master Plumbers Association, Inc., will hold its annual convention at Waterloo, Iowa on March 21, according to official announcement just issued by President G. J. Palmer of Ames, Iowa. The other officers of the association are Vice President William La Velle of Sioux City, Secretary J. W. Lundon of Dubuque, and Treasurer Roy M. Jenkins of Oskaloosa.

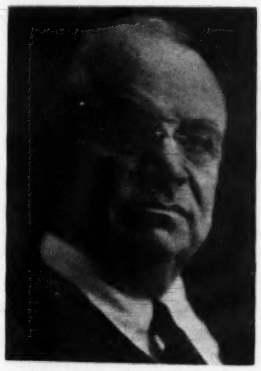
Two Guests of Honor at Buffalo Dinner-Dance

Henry J. Ritter, past president, and W. Frank Clucas, past secretary of New York State Master Plumbers Association, were guests of honor at a dinner-dance given by the Master Plumbers Association of Buffalo, N. Y., on Wednesday evening, January 17. The work of these two gentlemen as state officers during one of the most severe depressions in history, when unusual efforts were required to keep association work operating along sound lines, was eulogized by a number of well known master plumbers.

Julian G. Irr, chairman of the arrangement committee, welcomed the guests and introduced George H. Drake, past national president, who paid a tribute to the activities of Messrs. Ritter and Clucas in advancing the interests of the plumbing industry. John Boasberg, secretary to Mayor Zimmerman, extended the best wishes of the head of the city, to the two guests. Others who were introduced by

Toastmaster Drake, and who praised the work of the guests were: Lothar Gresens, state delegate, Rochester; E. L. Miller, secretary of the Rochester Master Plumbers' Association; Martin W. Utz, past state president of Rochester; Fred W. Zander, Crane Co., and George W. Frank, past national secretary. Herbert W. Dusdak provided the entertainment. Mrs. Arthur Huck, president of the Ladies Auxiliary of Buffalo, presented Mrs. Ritter and Mrs. Clucas with beautiful vases of roses, while testimonial gifts were presented to their husbands.

Thomas J. Sheehan's Appointment as Collector Confirmed



Thos. J. Sheehan

Thomas J. Sheehan, president of the Thomas J. Sheehan Company, plumbing contractors in St. Louis, Mo., has been appointed collector of internal revenue for the first district of Missouri, and his appointment was confirmed by the United States Senate on January 11. Mr. Sheehan was sworn in on January 20 and he will assume charge of the office February 1. Mr. Sheehan was formerly a member of the Board of Police Commissioners in St. Louis. He succeeds Louis J. Becker, a Republican, as internal revenue collector, and he was recommended for the post by United States Senator Bennett C. Clark.

Rockaway Master Plumbers Elect Officers

The Rockaways Division of the Master Plumbers Association of New York City held its annual meeting recently in the Men's Club at Arverne and elected the following officers: President, Wm. McNaught, re-elected; first vice president, Walter W. Hock; second vice president, David Mackler, re-elected; recording secretary, Frank J. Donnelly; treasurer, Peter M. Scott, re-elected; sergeant-at-arms, A. Abrahamson, and chairman of board of governors, William Rogers.

At the close of the election, President McNaught announced the other members of the board of governors as follows: Harry Hoffman, secretary; Samuel Friedlander, Thomas M. Donnelly, Harold Sammis, Henry J. Strining and Eugene W. Smith.

Reports on the activities of the association during the past year were submitted by President McNaught and Executive Secretary J. F. Harrington. President McNaught also extended his thanks to the outgoing officers for their co-operation during the year.

Macoupin and Montgomery Masters Elect Officers

The Macoupin and Montgomery Master Plumbers' Association held its annual meeting January 9 and elected the following officers: President, O. M. Denton, Hillsboro, Ill.; vice president, C. A. Napier, Litchfield, Ill.; secretary, C. Lang, Mt. Olive, Ill.; treasurer, J. T. Smith, Gillespie, Ill.; board of directors: F. McPherson, Gillespie, Ill., and H. E. Hopper, Staunton, Ill.

H. P. Reger, president, and Wm. R. Brookman, executive secretary, both of the Illinois Master Plumbers' Association, attended the December meeting of this organization, at which it voted unanimously to affiliate with the Illinois State Association.

Plate 3122 T

The Nationally Known

"Trentonian"

Closet Combination

Manufactured by

THE TRENTON POTTERIES CO.

is equipped with

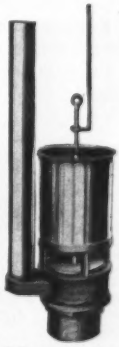
CURTIN BALLCOCK & FLUSH VALVE

It's Quiet Try It

Sell Curtin Tank Fittings in the combinations you install—also on replacement work. No Refill Tube Needed.

Satisfy your customers by furnishing the best.

NRA MEMBER U.S. WE DO OUR PART



Silent Action Automatic Refill

A. F. CURTIN VALVE CO.

Medford, Mass.

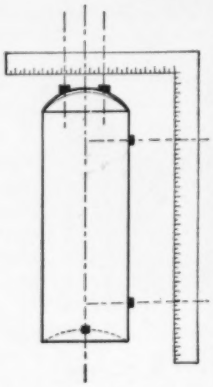
"We Compete in Quality Only"

"Pigs May Be Pigs," But—

there are Galvanized Boilers--and there are RIVERSIDE GALVANIZED BOILERS

There is a difference. Riversides are backed by nearly a half century of fine boiler making . . . backed by quality, experience and nationwide acceptance and *built* by a manufacturer who knows how to build boilers to meet the most exacting specifications.

"Steel Square" Construction



Long ago Riverside discarded the "rule of thumb" method for putting in and tapping spuds. Heads and bottoms of Riversides have integral spud construction, eliminating possible water leakage through the spuds. Side spuds, top and bottom spuds are accurately tapped by specially designed modern machines. None but perfectly aligned spuds at right angles are the result. The elimination of cock-eyed spuds insures an installation you will be proud of. And your customer will say "There's the job of a real mechanic".

Attractive two-color mailing piece entitled "Pigs may be Pigs" but RIVERSIDE Galvanized Boilers are NOT Just Boilers," will be sent with your imprint, free of charge. Slip them in your invoices and they will "pep up" your sales.

RIVERSIDE BOILER WORKS, INC.
CAMBRIDGE *(Since 1889)* MASS.

NYE TOOLS

NYE TUBE CUTTERS

No. 1—⅛" to ¾" O. D.
No. 2—¼" to 1¼" O. D.

The Nye Tube Cutters for copper, brass and lead tubing, equipped with the latest type Nye Ground Wheels and high grade ground alloy steel reamer, provides a small, but strongly constructed tool, suitable for the plumber, refrigerator repair man and automobile mechanic.

Due to the wheels having a finely ground edge, they leave but a very slight burr, easily removed by the reamer.

ASK YOUR JOBBER

***The* NYE Tool & Machine Works**
4120-30 Fullerton Avenue, Chicago, Ill., U. S. A.

Among the Plumbing Contractors in Chicago

The Merchandising Group of the Plumbing Contractors' Association of Chicago will have Lee Maars of the Walton School of Commerce as its guest at its next meeting to be held in the association rooms, 176 West Adams Street, on Tuesday evening, February 13th. Mr. Maars, it will be remembered was the instructor of the Salesmanship Class that was held two years ago under the auspices of the Plumbing and Heating Industries Bureau and which was attended by many master plumbers.

On the occasion of its installation of officers, the North and West Side Master Plumbers' Club of Chicago celebrated with a dinner on Friday evening, January 26th, at John Klennert's Place, 7610 Irving Park Blvd. The officers of the club for 1934 are: President, Walter Sievers; vice-president, Fred W. Sorge; financial secretary, Henry Diedesch; recording secretary, Chas. Burmeister; treasurer, Henry Breyer, and sergeant-at-arms, Paul Jacoby. L. P. Markowski, the retiring president, was presented with a fountain pen in appreciation of his services as president during the past year, and a similar token was presented to Peter Munn, who served as acting secretary for the club for a number of years.

Stanley Kufflewski has recently been appointed Chief Inspector of the Plumbing Branch of the Illinois State Department of Registration and Education, with headquarters at 360 North Michigan Avenue, Chicago. This department has under its supervision the enforcement of the Illinois Plumbing Law, and all violations where work is being done by other than licensed master plumbers, particularly outside the city limits, will receive prompt attention from the chief inspector.

The contract for the plumbing of an addition in the Henrotin Polyclinic Hospital, Oak and LaSalle Streets, Chicago, to cost approximately $500,000, has been awarded to O'Callaghan Brothers. This firm is completing the plumbing installation in the last section of the Field Building at Adams and Clark Streets, one of the few office structures built in the business district during the past year.

The contract for the creation to cost upwards of $500,000 was signed recently with the World's Fair officials by Nicolas Arias, head of Espana Poristica, Inc., a newly organized corporation, which will take over the site formerly occupied by the Spanish Pavilion and the Oriental Village near 23rd Street. A Swiss Village and a Colonial Village, all World's Fair productions, will also be built. These are not included in the Chicago building permits, as they are beyond the city jurisdiction, but will help to stimulate activity in the building industry between now and the opening date of the Fair, June 1st.

Philadelphia M. P. Directors Entertained

The members of the board of directors of the Master Plumbers' Association of Philadelphia were recently entertained at the home of Howard Neilson, the guest of honor being Edw. F. Roberts. All the members of the board were present and they presented Mr. Neilson with a handsome chair for a living room.

E. P. Saeger Appointed Plumbing Inspector in Allentown

Edwin P. Saeger, president of E. P. Saeger Co. in Allentown, Pa., has been appointed plumbing inspector for that city and assumed the duties of that office on February 1st. He succeeds Charles H. Kramer, who held the position for sixteen years.

Illinois Opens 1934 Conventions

Large Crowd Hears of Association's Growth—Reger Re-Elected

John J. Calnan, vice president of the National Association of Master Plumbers and Rupert J. Weber, vice president of the Illinois association, both of Chicago

Henry P. Reger, re-elected president of Illinois

ILLINOIS opened the 1934 convention season. The attendance ran well above the several preceding years. In addition, the interest shown in the sessions was such as to indicate that this year will set a better convention record with attendants anxious to learn how to meet new conditions.

Henry P. Reger of Chicago, who has headed the Illinois association for two years, was unanimously re-elected, in recognition of his striking achievement in building up the membership from a low point of 44 to more than 800 today; in overcoming a large deficit and creating a present surplus and in meeting the unusual demands imposed by NRA work.

Rupert J. Weber of Chicago was re-elected first vice president in recognition of his active support of Mr. Reger. J. A. VanNattan of Springfield was made second vice president while William F. Hildeman of Chicago Heights was the unanimous choice for re-election as treasurer.

The program embraced an unusual variety of subjects, at least a half dozen of which proved their value by the active discussion which they aroused. The wide range of subjects covered is indicated in the following list of topics and speakers: "The National Association" by John J. Calnan of Chicago, vice president of the National Association of Master Plumbers; "The Manufacturers' Codes of Fair Competition" by Lucius P. Chase of the Kohler Co.; "Lead and Its Usage in Modern Plumbing" by Robert Dick, Lead Industries Association of New York; "Our Future Program" by W. E. Price, Knapp Supply Co., Muncie, Ind., president of the Central Supply Association; "Changes in Our Industry We Must Prepare to Meet" by T. W. Merryman, a member of the merchandising group of the Plumbing Contractors' Association of Chicago; "The Wholesalers' Code of Fair Competition" by William J. Spillane, James B. Clow & Sons, Chicago, chairman of the Wholesaler Joint National Code Committee.

"Code of Fair Competition for Master Plumbers" by Robert J. Barrett, Washington, D. C., president of the National Association of Master Plumbers; "Jurisdictional Disputes" by Martin P. Durkin, director of the Department of Labor of Illinois; "State Plumbing License Law" by Eugene R. Schwartz, Superintendent of Registration of the Department of Registration and Education, of Illinois; "Building Good Will for the Licensed Master Plumber" by Norman J. Radder, secretary-manager, Plumbing and Heating Industries Bureau, Chicago; "How the Wholesalers Credit Bureau Helps the Master Plumber" by W. W. Fullager of the Crane Co., Chicago, and president of the Illinois Credit Bureau; "The Retailers Occupation Tax Act" by J. M. Braude, assistant to the director of the department of finance of Illinois; "Plumbing Merchandising—A Racket Without a Noise" by W. E.

The Quincy convention of the Illinois association drew a large attendance

Bogan, of the Central-Illinois Light Co. of Peoria; "The Value of Credit and Collection Service to Local Associations" by Peter M. Munn, secretary of the Plumbing Contractors' Association of Chicago and "Co-operation Between Master Plumbers and Journeymen" by George Masterton of Chicago, general organizer of the United Association of Journeymen Plumbers and Steamfitters, Illinois division.

In addition to these announced features of the program, interesting short talks were given by some of the members and visitors while the discussions were instructive. Also the various state officers as well as chairmen of regular and special committees reported on their work and reflected the tremendous growth of the Illinois Association in the past year.

The Quincy association under the leadership of its president, Seward Best, had worked hard in preparation for the convention and the result was evident in the satisfaction expressed by the visitors both with the handling of the convention and of the character of the entertainment. William R. Brookman, Chicago, executive secretary of the Association, similarly was complimented upon his record during the last year—the best in the association's history. William J. Lang of Chicago was general chairman of the convention committees and had worked hard for a successful meeting.

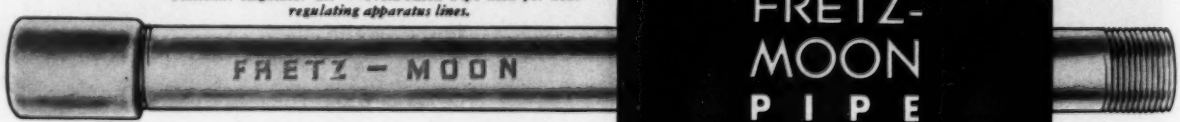
(Continued on page 132)

Top: Fred Schnack, John Lammers, Fred Luthin, George Ernst and Karl Luthin, all of Quincy. Middle: Robert Hunt, president of St. Louis and secretary of Missouri, Charles Burgess, past president, St. Louis, Edward Monteath, Missouri NRA representative, Frank J. Murphy, president of Missouri, all of St. Louis, and W. E. Price, Muncie, Ind., president, Central Supply Association. Bottom: Charles Gawne, president of Chicago, Seward Best, Quincy, general convention chairman, William J. Lang, Chicago, chairman of Finance and Arrangements and William A. Crowley, of Peoria

WHEN every penny counts you'll get more for your money in "Continuous Process" Pipe

FRETZ-MOON PIPE—the only pipe made by the "continuous process"—has proved time and again that it saves installation time and money. • The flat ribbon of steel from which Fretz-Moon Pipe is made is carried through a continuous furnace at a closely controlled rate of speed. Every inch of metal as it leaves the furnace is at exactly the same temperature as every other inch. Thus, no areas have an opportunity to become overheated or "burnt" and cause hard spots to make trouble in bending, cutting or threading on the job. • When every penny counts—when you must obtain high quality—it will pay you to investigate this "continuous process" pipe.

WESTERN UNION BUILDING • NEW YORK, N.Y.
Architects: Vorhees, Gmelin & Walker. Engineers: Meyer, Strong & Jones. Builder: Marc Eidlitz & Son. Heating and Ventilating Contractor: Almirall & Co. Sub-Contractor: National Regulator Co. • Fretz-Moon Pipe used for heat-regulating apparatus lines.



FRETZ-MOON PIPE
BLACK & GALVANIZED

FRETZ-MOON TUBE CO., Inc., Butler, Pa.

Otto Waskow, Milwaukee; John P. McCoy, Fond du Lac, re-elected Wisconsin president; Rupert J. Weber, Chicago, Illinois vice president; Fred C. Kuetemeyer, Milwaukee, and Henry Weber, president of Milwaukee

Many Attend Wisconsin Convention

Codes Arouse Interest—Calnan Tells of National Association

MILWAUKEE entertained the members of the Wisconsin Master Plumbers' Association on January 23 and 24. The attendance was large and the interest of the members in learning more of the many new developments which 1934 is bringing, was reflected at each session. Code developments, an outline of National Association activities by Vice President John J. Calnan of Chicago, engineering and merchandising subjects, all combined to make up an interesting program.

John P. McCoy, Fond du Lac, was re-elected president for the third year, the members expressing appreciation for his success in building up the association and in carrying on NRA activities in his position as state executive. R. T. Morrill of Beloit was elected first vice president; R. T. Royston of Madison, second vice president; Charles Pelunek and Joseph Wittig, both of Milwaukee, were re-elected to the positions of secretary and treasurer. Jacob Schuh of Milwaukee and Andrew Tweet, Green Bay, were chosen as delegates to the National convention with Ray Toner of Oshkosh and Philip Schneider of Sheboygan as alternates.

The code discussion, which attracted the greatest interest, is reported on pages 22 and 23 of this issue. With January having witnessed so much definite action on the plumbing codes, the members were deeply interested in the various reports.

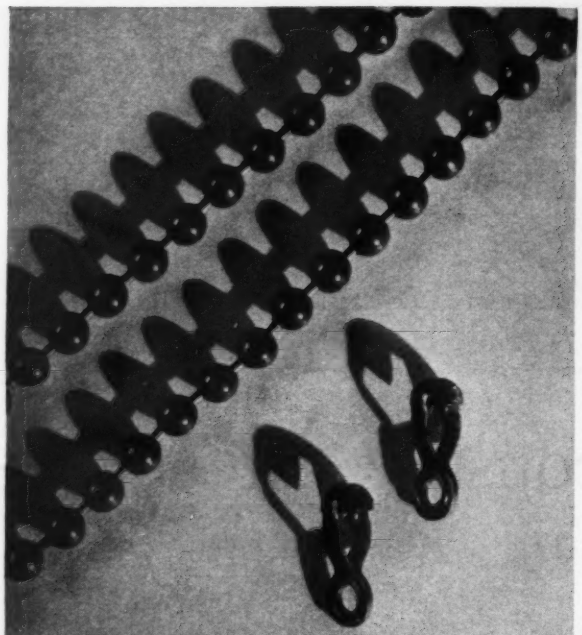
Activities of the CWA in carrying out its relief program were discussed. It was decided to send a letter to the state CWA director, suggesting changes in the methods of purchasing supplies which it was felt would aid in the economical and effective carrying out of this federal program in Wisconsin. Similar letters were ordered sent to Wisconsin representatives and senators.

F. M. Dawson, professor of hydraulic and sanitary engineering at the University of Wisconsin in an address on "Research Problems" discussed water hammer and its causes and told of other interesting experiments carried on at the University. The association voted to request Professor Dawson to conduct another short course for master plumbers, L. J. Eron of Wisconsin Rapids being one of those who told of the value of this course.

"Lead and its Usage in Modern Plumbing" was discussed by Robert Dick of the Lead Industries Association of New York. He showed how lead work would forestall competition by unqualified men. Norman J. Radder, secretary-manager of the Plumbing and Heating Industries Bureau, in telling of "Building Good Will for the Master Plumber," showed the great amount of newspaper, magazine and radio publicity secured during the past year through the work of the bureau. This publicity emphasizes the importance of good materials and of proper installation by qualified master plumbers.

Frank R. King, director of the bureau of plumbing and domestic sanitary engineering of the Wisconsin state board

Charles Pelunek, Milwaukee, re-elected secretary; Lewis R. Friend, Milwaukee, and George F. Reeke, Green Bay; Joseph Wittig, Milwaukee, re-elected treasurer and C. Verbrick, Appleton, Wis.



Neatness
COUNTS

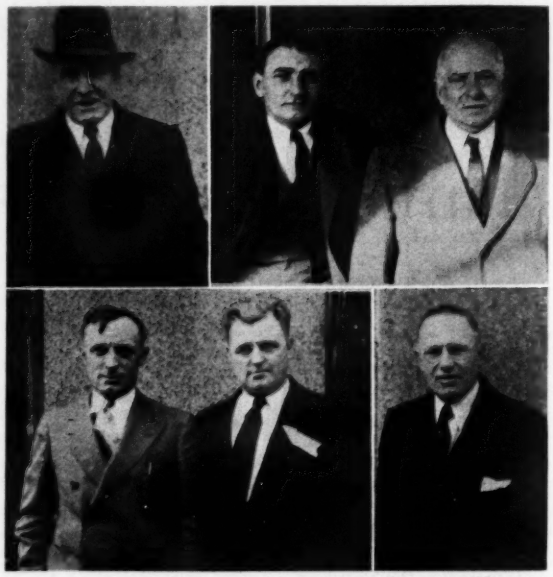
So, when chain is needed, use Bead Chain with its glistening metal beads, non-kinkable swivel joints and strong smooth couplings. Bead Chain will give a neater finished job for tub and lavatory stoppers, shower curtain hold-backs, furnace draft controls, ventilators and skylights. And wherever you see the need of chain, in private homes, apartments, hotels and public buildings suggest Bead Chain replacements. It is the standard chain for modern fixtures.

USE
BEAD CHAIN
FOR PLUMBING

Trade Mark Reg. U. S. Pat. Off.

THE BEAD CHAIN MANUFACTURING CO.
BRIDGEPORT CONNECTICUT

of health, reported that the state wide apprentice survey would be completed this year. Apprentices are being selected with greater care and are being better trained. Mr. King said that between 14,000 and 15,000 tavern licenses have been issued in Wisconsin and since toilet room facilities are required in each, many thousands of plumbing fixtures have been installed and are still needed properly to equip these taverns. He emphatically urged that sanitary standards be not lowered, that plumbing inspectors be re-



Top: Thomas Long, Appleton; Carl H. Marquart, Oshkosh; Joseph Brah, Milwaukee. Bottom: A. A. Hoffman, chairman and Alfred Heiden, member, of convention committee, both of Milwaukee; Louis R. Schmaus, Milwaukee

tained and called attention to new Wisconsin codes covering taverns and swimming pools.

Henry P. Reger, newly re-elected president of Illinois, urged greater interest in organization as a positive means of improving conditions. Mr. Calnan, after extending greetings from National President Barrett, outlined in an instructive address the many ways in which the national association is working for the improvement of the plumbing industry and for the benefit of its members.

The entertainment features for members and visitors were well planned and contributed to the success of the convention.

The following committees directed the work of the convention:

CREDENTIAL: H. A. Wegner, Milwaukee; Don Ahern, Fond du Lac; W. A. Kramer, Waukesha; L. C. Welch, Baraboo.

RESOLUTION: F. C. Kuetemeyer, Milwaukee; George F. Reeke, Green Bay; Robert Morrill, Beloit; P. H. Schneider, Sheboygan; Thomas Long, Appleton; Chas. Baumgardt, Wausau; Lewis J. Eron, Wisconsin Rapids; A. F. Boettcher, Milwaukee.

SERGEANT-AT-ARMS: Jacob Mergenthaler, Jr., Milwaukee; Hugo Berndt, Milwaukee; R. B. Randall, Milwaukee; H. H. Borkenhagen, Milwaukee; Arthur Zepf, Milwaukee.

MILWAUKEE ENTERTAINMENT: A. A. Hoffmann, H. A. Wegner, George Bronenkant, Alfred Heiden, Clarence Savadil, all of Milwaukee.

Tell Your Local Committee

How Public Work Should Be Done

By J. L. Murphy

Why rural districts, towns, cities and municipalities of all kinds should not hire men directly. These men should be supervised by capable men who by long experience in their respective industries are capable of supervising.

1. The city has not the organization to supervise journeymen plumbers employed directly.

The installation and repair of plumbing systems is a highly technical work and it is necessary that the journeymen be supervised by competent and experienced foremen and superintendents. Foremen and superintendents are selected because of their ability to select the proper material and layout and direct the installation of that material. They are expert in diagnosing complaints and faults of existing plumbing systems and correcting them. It is essential that on each job there should be one person responsible for the correct installation of the work. The services of such foremen can only be obtained and effectively used in conjunction with the experienced organization of a contracting plumber. This method of doing plumbing work has been evolved as the cheapest and most efficient method of installing plumbing in the United States.

2. The city has not the tools and equipment that are necessary to the proper repair and installation of plumbing.

The journeyman plumber owns and carries to work just a small number of small tools. For plumbing work today much equipment and many large tools are needed. These tools and equipment are owned by contracting plumbers, and for the most part are lying idle and unused today. These necessary tools are worth approximately $700 per set, and there should be a set available for each journeyman employed. The city does not have these tools and equipment, and there will result a condition wherein men are left standing around on jobs being paid but unable to work because of lack of equipment. It would not be prudent for the city to invest a large sum of money in tools and equipment at this time.

3. It is a risk against the general public health and is directly contrary to the law of the State of New York.

The general city laws of the State of New York signed by Governor Charles Evan Hughes, now chief justice of the Supreme Court, state that the installation of plumbing in the City shall be done by a licensed and registered plumber, or a journeyman plumber in his employ. A licensed plumber is one who has been examined by the board of examining plumbers and certified as to his knowledge of sanitation and laws governing plumbing. This law was passed as a protection to the public health. It is essential to the general sanitary conditions and to the protection of public health that all plumbing work be done under the supervision of a licensed plumber. For these licensed plumbers are contractors who devote all of their time to systems supplying clean water, and fire protection water, and removing human waste in a sanitary manner. Not to employ licensed and registered plumbers to do the City's plumbing work is a jeopardy to public health that cannot be justified at any cost.

4. It threatens the business life of a whole trade group—the contracting or master plumbers—which is specifically against the wishes of President Roosevelt who does not wish any trade customs and practices disturbed at this time.

In the past 50 years definite trade practices have grown up in the building industry. In plumbing, an owner whether private, or National, State or local government, has asked a contracting plumber to survey the work desired by the owner, and to submit an estimate of cost in competition with other contractors. The work is then given to the lowest reliable bidder. The figuring on these jobs, the subsequent ordering of materials and supervision of mechanics, calls for a highly specialized organization, which is at the command of the contracting plumber. If the city employs mechanics directly, it is in effect throwing these contracting plumbers out of business and with them their entire organization of phone girls, stenographers, bookkeepers, superintendents, etc., and adding directly to the unemployment problem, and although the same number

LIST OF TOOLS REQUIRED TO DO PLUMBING WORK. THESE ARE IN addition TO THE JOURNEYMAN PLUMBER'S LIST

1	Basin wrench	$ 1.25
1	Closet spud wrench	.50
1	Ratchet wrench	6.00
1	Set plumbers screw plates ⅛" to ½"	7.70
1	Set combined taps and drills ⅛" to 3"	95.00
1	Tool chest	36.00
1	Large joint reamer	2.05
1	Emery wheel	6.49
1	Smoke machine	175.00
1	Sewer rod	13.00
1	Snake wire	.90
1	Set bibb resetters	5.40
1	Hydraulic pressure pump	20.00
1	Gas force pump	18.00
1	Mercury gauge and pump	14.00
1	Ton chain block	43.00
1	Drilling post (or old man)	4.50
1	Rotary hack saw	26.00
2	Star drills 1—½" 1—1"	1.86
1	Sledge hammer	1.55
1	Ladder	9.60
1	Hand truck	7.20
1	Set flaring tools for tubing	12.60
1	Single block	1.65
150	Feet of 1" rope	10.00
1	Pick	1.75
1	Shovel	1.25
1	Vise ⅛" to 4½"	8.03
1	Pipe vise stand	10.65
1	Two and one-half inch to 4" stock and ratchet	50.00
1	Two and one-half to 4" cutter	11.00
1	One-inch to 2" Toledo stock	9.60
1	One-inch to 2" cutter	3.00
1	One-fourth-inch to 2" Armstrong stock for brass	7.80
1	One-eighth-inch to 1" Beaver stock	12.00
1	No. 1 cutter ⅛" to 1"	2.00
1	Ratchet reamer ⅜" to ⅞"	6.00
1	Oil can	.20
2	Four ft. chain tongs	17.60
2	Three ft. chain tongs	11.20
1	Four ft. Stillson wrench	6.75
1	Three ft. Stillson wrench	4.05
2	Two ft. Stillson wrenches	4.60
2	Eighteen-inch Stillson wrenches	2.98
1	Set Parmelee wrenches	8.55
1	Tubing stock 1" to 2"	9.10
1	Torch	4.50
1	Charcoal furnace 10"	2.30
1	Lead pot	.60
	Total cost	$714.76

of people would eventually be re-employed it is this realiocation and disturbance both of financial arrangements and personnel that cause the hardship that the entire country under President Roosevelt is endeavoring to avoid.

From these statements we see that the City of New York should have its plumbing work done by contracting plumbers; first—it is to the best interest of the taxpayer because this method is more efficient, economical, and a greater safeguard to public health; second—it is to the best interest of the general public in the recovery program to see that present channels of business are not disturbed.

In Cleveland, Ohio, the Emergency Work Bureau is employing contracting painters to supervise work at a very low cost to the city, and these contracting painters are supplying the equipment for the men to work with.

J. L. Murphy,

Chairman of the Standardization Committee of the National Association of Master Plumbers of the United States.

C. W. A. Criticized—

(Continued from page 23)

of that program, as the projects done under it must be carried on by day labor and not by contract. It also places the government in direct competition with the plumbing contractors, who find it difficult under present conditions, to make a livelihood for themselves and families.

When it was announced late in November that the City of Chicago in conjunction with C. W. A. would directly employ journeymen plumbers to make repairs to the plumbing system in private homes and buildings, whether metered or unmetered, the Plumbing Contractors' Association of Chicago made a vigorous protest to the Commissioner of Public Works, to the Mayor, and the Civil Works Administrator, R. J. Dunham, calling their attention to the fact that under the statutes of the State of Illinois and the Plumbing Code of the City of Chicago, the master plumber is licensed by the state and city and is required to pay an annual renewal fee for his certificate and is also required to execute a bond to the city in the sum of $10,000 and that it would be most unfair, as well as unlawful for the City of Chicago to employ journeymen plumbers who did not meet with this requirement, particularly in private homes and dwellings.

No objection was entertained to journeymen plumbers in the employ of the city making necessary repairs to public work, repairing leaks in the street, calking water mains, digging up buffalo boxes, to investigate leaks in the water system and doing other work that naturally comes under the jurisdiction of the City of Chicago, but to enter homes and even buildings which are equipped with water meters to make repairs to the plumbing, the master plumber feels is a waste of government money and a dislocation of private industry, which was never intended by the government. Work of this character inside the building is not a civil works project and should be paid for by the owner, as they do not believe that the Civil Works Administration intended to place a handicap and a hardship on one set of citizens at the expense of another class who are equally in need of government support.

With the suspension of new building, which has been practically at a standstill, overhauling and repair work in private homes and buildings is the only work that the plumbing contractor has left as a source of work to employ journeymen plumbers. If this work is taken away from the master plumber, he will not be able to employ anyone. It has only been through repair work of this kind that he has been able to hire journeymen plumbers during the past few years, and has thus been able to keep a number of men employed who otherwise would have been on the relief rolls. If this work is denied him, the master plumber himself will be forced to go on relief as some of them already are.

Not only in Chicago, but elsewhere throughout the country, similar complaints have been made. In some cases the plumbing contractor has been handicapped to the extent of having his men taken from jobs on which they were working to work on CWA projects. Local politics in most instances have crept in to control the men who are hired by the city in conjunction with the officials of the Civil Works Administration and in most cases the men thus employed have to receive the O. K. of union officials. No master plumber no matter how badly he may need work can secure employment on CWA projects unless he affiliates and is approved by the union. All Chicago journeymen plumbers employed on C. W. A. projects are required to pay into the union at the rate of seventy-five cents per day.

It has been stated that the appropriation for C. W. A. projects will be exhausted long before the journeymen plumbers in the city employ will have an opportunity to make repairs inside of buildings, but the municipality has already placed orders for material to be used in making these repairs. Regardless of whether or not the city makes these repairs irreparable damage has already been done to the master plumbers through the announcement in the public press that it is the intention of the city to make these repairs in private homes. Much repair work which otherwise would have gone ahead and which would have stimulated business for the master plumber has been postponed by the home owner or building manager waiting for the city to make the needed repairs.

An appeal has been made to the National Association of Master Plumbers to take the matter up with the proper officials of the government at Washington, and just as soon as a sufficient number of complaints are received from the various state associations, a brief will be formulated.

Barrett on Codes—

(Continued from page 21)

On Monday, January 15, the wholesalers consequently submitted to N. R. A. their code without the rule. Shortly afterward, the plumbers filed their code without the wholesaler provisions and also filed a brief protesting against the wholesalers' code. Under present conditions, the plumbers' code does not tie the plumber to the wholesaler leaving him free to compete with the wholesalers who decide to try retailing.

He does not know why the three codes could not be correlated as the master plumbers have always been sympathetic with manufacturer and wholesaler problems. He recalled that at New Orleans, resolutions favoring plumbers buying directly from manufacturers were submitted from 9 states and 18 states altogether were planning such resolutions. National officers succeeded in checking this movement.

President Barrett feels that a few opponents on the wholesalers' committee do not represent that industry, and are selfishly fostering their own rights. The wholesalers group was possibly not thoroughly representative whereas the master plumbers' officecrs thought along national and not sectional lines. He concluded with the statement that the plumbers could have had a code by now if they had been willing to accept anything but that their officers were determined to cure now as many as possible of the problems which have held back their industry.

New Officers of Local Association

ALBANY, N. Y.—Albany Master Plumbers' Association: President, E. W. Tompkins; vice president, Martin Farrell; treasurer, Joseph Nicklas; recording secretary, Edward J. Daly; financial secretary, J. Matt de Rouville; sergeant-at-arms, Arthur Keller; trustees: A. J. Eckert, T. Thomson, V. Scovello, W. Houseveller and A. Decker.

CINCINNATI, OHIO.—Cincinnati Master Plumbers' Association: President, Bernard A. Walterman; vice president, Raymond Markus; secretary, N. G. Herzer; treasurer, Henry Niemes; sergeant-at-arms, Alois Padeer; board of directors: John Dougherty, John Hirth and John Williams.

CLARENDON, VA.—The Plumbing and Heating Contractors Association of Northern Virginia, Inc.: President E. H. Birch, Cherrydale, Va.; vice president, P. E. Scheffel, Arlington, Va.; P. C. King, Clarendon, Va.; treasurer, C. Sanderhoff, Clarendon, Va.; board of directors: H. C. Messner, Clarendon; C. P. Nichols, Falls Church, Va. and C. E. Lodson, Arlington, Va.

COLUMBUS, OHIO.—The Columbus Master Plumbers' Association: President, John Bittner; vice president, J. H. Duffy; secretary and treasurer, Wm. A. Schneider.

DALLAS, TEX.—The Master Plumbers' Association of Dallas: President, W. H. Kuhn; vice president, A. S. Johnson, and secretary-treasurer, F. D. Royse.

FLORAL PARK, N. Y.—Master Plumbers Association of Nassau County; President, William Metcalf; vice president, Larry Bennett; recording secretary, William Jacobi; treasurer and financial secretary, William Bloeth.

GLEN ELLYN, ILL.—Plumbing and Heating Contractors' Association of Northern Du Page County: President, Herman Rieser, Wheaton; vice president, George Saunders, Glen Ellyn; secretary and treasurer, Edward E. Wiesbrook, Glen Ellyn.

HARRISBURG, PA.—Harrisburg Master Plumbers' Association: President, John Newkam; vice president, Maxwell Fasick; secretary and treasurer, John H. Miller.

JACKSON, MISS.—Jackson Master Plumbers' Association: President, H. H. Peters; vice president, S. S. Richards; secretary, E. A. Harwell.

KANSAS CITY, MO.—Kansas City Master Plumbers' Association: President, J. S. Levene; vice president, E. A. Slocum; secretary, William Mallon; treasurer, E. A. Kuebler; board of directors: W. T. Conroy, E. F. Spaeth, George L. Satterlee, George F. Melis and George E. Foley.

LINCOLN, NEBR.—Lincoln Retail Plumbers' Association: President, W. M. Miller; vice president, Victor Anderson; secretary, J. Niblock, 2648 Everett Street; treasurer, A. J. Weyant.

MANSFIELD, OHIO.—Mansfield Master Plumbers' Association: President, W. E. Antrican; vice president, W. L. Early; secretary and treasurer, C. Ed Millington.

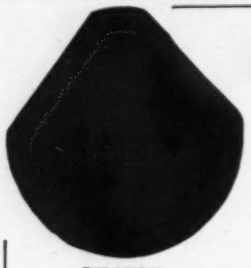
MILWAUKEE, WIS.—Milwaukee Master Plumbers' Association: President, Henry C. Weber, re-elected; vice president, Ervin B. Knauer; secretary, Edward F. Trebs, re-elected; treasurer, Walter Tesch, re-elected.

NEWARK, N. J.—The Master Plumbers' Association of Newark: President, Michael T. Baudermann; first vice president, Joseph C. Turbett; second vice president, William Rigney; secretary, W. Brand Smith, and treasurer, James O. Lewis.

NEW ORLEANS, LA.—New Orleans Association of Master Plumbers: President, W. J. Quinlan, Jr.; vice president, James F. O'Neil; secretary, Louis H. Faivre; treasurer, A. J. Sciambra; sergeant-at-arms, O. H. Pique; directors: W. J. Quinlan, Jr., chairman; A. H. Grimaldi, L. J. Petrie, R. W. Reynolds, Jr., L. H. Faivre, L. C. deLeon, J. R. Lawton, E. L. Kimble, and A. H. Kussman.

Economical
In the long run it costs less to use Duriron Acid-Proof Pipe and Fittings because there is no replacement expense.
THE DURIRON CO., Inc.
410 N. Findlay St. Dayton, Ohio
DURIRON
ACID PROOF
DRAIN PIPE

A NEW INVENTION
Keeps Sediment out of
Range Boilers and
Hot Water Storage Systems
DAHLQUIST-TURBO
Dahlquist copper automatic hot water storage systems and range boilers equipped with the TURBO use 50% less gas and deliver an abundance of clean, fresh, rust and sediment-free hot water day and night.
Super Aquatherm Gas Underfire
Copper is nature's own material for storing hot water; never rusts or deteriorates. But regardless of the metal used, sediment in the water will form a coating of mud on the bottom unless it is equipped with Theodore W. Dahlquist's latest invention—THE TURBO.
The patented TURBO placed in all Dahlquist's boilers at no extra cost prevents mud from forming—keeps hot water clean—prevents costly burn-outs—reduces cost of gas.
Turbo-Aquather m
A new patented device which prevents mud from accumulating in the boiler.
Architects and Heating Engineers may rely entirely on Dahlquist workmanship and experience, whether for range boilers, automatic storage boilers or heavy pressure boilers.
DAHLQUIST MFG. COMPANY
60 West 3rd Street So. Boston, Mass.



THE LEADER TANK BALL

DEPENDABLE?

Why, many contractors wouldn't think of using anything but the Reichert Quality Line of Tank Balls and Floats. It fills their every requirement, giving them complete satisfaction and yielding them an attractive profit. What else could they ask?

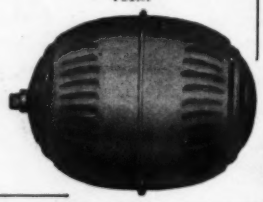
Well made of best materials, The Leader Tank Ball assures long service, seating perfectly every time. Priced unbelievably low, this super-valve—the biggest profit maker today—is in big demand.

Federal Floats are designed for use where service is particularly severe, factories, schools, public buildings, etc.

The Toledo Solderless Float has been recognized for years as the float that stands up under abusive treatment.

Write today or ask your jobber for the Reichert profit-making story.

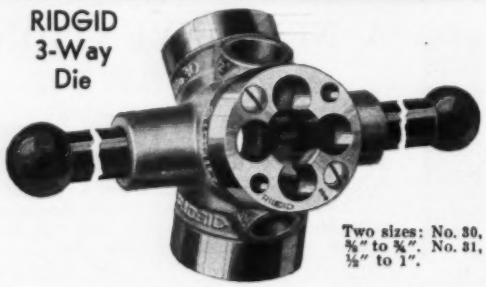
FEDERAL FLOAT



THE REICHERT FLOAT & MFG. CO.

2238 Smead Ave., Toledo, O.

RIDGID 3-Way Die



Two sizes: No. 30, ⅜" to ¾". No. 31, ⅛" to 1".

Threads 'em All Without Special Dies

RIDGID 3-Way Die Stocks thread ⅜" to 1" pipe —but also short pipe projecting from a wall without special dies. Simply unscrew die from head and reverse it. That's only one feature of these compact, light, powerful tools. Durable, fine-cutting, positive button dies—no adjustments. Held by 2 screws and 2 lugs, easily removed for regrind.

RIDGID Ratchet Threaders, small, light, strong, well-balanced. Die heads snap in from either side; can't fall out. No. 5R, ⅛" to ⅝". No. 15R, ⅜" to 1¼".

You'll like them—see your Jobber.

THE RIDGE TOOL COMPANY
ELYRIA, OHIO, U. S. A.

RIDGID

PIPE WRENCHES, CUTTERS, VISES, THREADERS

NEW YORK, N. Y.—Bronx Master Plumbers' Association: President, S. George Arnone; vice president, Frank R. Roth; secretary, Philip Farbman, and treasurer, Alfred Beyrodt.

NEW YORK, N. Y.—The Manhattan Branch Association of Master Plumbers: President, Joseph F. Heck; vice president, Herbert A. Halloran; secretary, Herbert Smith; treasurer, Robert A. Higgins.

NIAGARA FALLS, N. Y.—The Master Plumbers' Association of Niagara Falls: President, Howard A. Einsfield; vice president, Thomas Alexander; secretary, Fred R. Peuss, 356 Sixth Street; treasurer, Chas. J. Woolcock.

PEORIA, ILL.—Peoria Master Plumbers' Association: President, Lee Rose; vice-president, Harry Rose; recording secretary, Fred Siefert, 207 North Glendale Avenue; executive secretary, H. P. Marshall; treasurer, Milton Hitchcock, plumbing inspector, City Hall.

QUINCY, ILL.—Quincy Master Plumbers' Association: President, Seward Best; vice president, A. C. Shuering; secretary, Elmer E. Ernst, 615 Hampshire Street; treasurer, A. L. Hasse.

RACINE, WIS.—The Master Plumbers' Association of Racine: President, S. Solheim; vice president, A. Ernst; treasurer, Louis Schoenleben; secretary, N. C. Holgard; directors: W. R. Pugh, John Feiner and J. S. Martin.

ROCK ISLAND, ILL.—Master Plumbers Asociation of Rock Island; President, C. E. A. Nutting; vice president, Bernt Sward; secretary and treasurer, R. C. Lamp; sergeant-at-arms, J. J. Gross.

SIOUX CITY, IOWA.—Sioux City Master Plumbers Association: President, H. N. Labbitt; vice president, M. J. Orr; secretary, Wm. V. Hagan, 506 Pearl Street; treasurer, Wm. Johnson; board of directors: Leo Maroif, H. M. Armstrong and Paul F. Beane.

SHEBOYGAN, WIS.—Sheboygan Master Plumbers' Association: President, Walter E. Murphy; vice president, Philip A. Schneider; secretary, Joseph A. Sonntag; treasurer, Otto Junck.

SAN ANTONIO, TEXAS.—The San Antonio Master Plumbers' and Heating Contractors' Association, Inc.: President, Harry Wharton; vice president, George Logan; secretary-treasurer, E. A. Jordan; secretary-manager, Felix Wahrmund; assistant secretary and secretary of executive board, R. G. Thomas.

SAN DIEGO, CALIF.—San Diego Merchant Plumbers' Association: President, C. F. Hoffman; vice president, J. B. Howell; secretary, A. C. Goeddell, and treasurer, G. F. Radcliffe.

SPRINGFIELD, OHIO.—Springfield Master Plumbers' Association: President, Earl Sharp; vice president, James Markin; secretary, John Krieg, 427 South Wittenberg Avenue; treasurer, George F. Ridenau.

TOMPKINSVILLE, S. I., N. Y.—Richmond Borough Branch of the Greater New York Master Plumbers' Association: President, William H. Ahrens, New Dorp, S. I.; vice president. Philip Beyer, Stapleton, L. I.; recording secretary, James J. Brady, Tompkinsville, S. I.; treasurer, John Missall, Port Richmond, S. I.; financial secretary, George Morris, Annadale Station, S. I.

WILLIAMSPORT, PA.—Williamsport Master Plumbers' Association: President, Henry O. Heiser; vice president, Ash Hunt, and secretary-treasurer, William J. Richardson.

WILMINGTON, DEL.—Master Plumbers' Association of Wilmington: President, Herbert F. Weldin; vice president, William F. Dorsey; secretary, Harry I. Bell, 526 Citizens Bank Building; treasurer, James P. Pansell.

So. Dakota Master Plumbers Meet in Sioux Falls

Clifford F. Smith
Secretary

C. Emil Carlson
President

Change Name of Association

Commend President Barrett for His Code Work

A SPIRIT of optimism prevailed throughout the fourteenth annual convention of the South Dakota Retail Plumbers Association, which was held at the Cataract Hotel in Sioux Falls, S. Dak., on Tuesday and Wednesday, January 16 and 17. The association is taking on new life. Nearly fifty per cent of the total number of master plumbers in the state are now enrolled, and at least seventy-five per cent of the plumbing and heating work in the state is done by association members.

The election of officers resulted as follows: President, C. Emil Carlson, Sioux Falls, re-elected; secretary-treasurer, Clifford F. Smith, Sioux Falls, re-elected; vice president, Earl Traut, Rapid City; board of directors, Joseph Vinatieri, Yankton; C. L. Breedlove, Madison; A. F. Luck, Watertown, and E. A. Pugsley, Huron (all re-elected); and Jack Pyne of Aberdeen.

Owing to the fact that National Director Jere Sheehan of St. Louis was unable to attend the convention, H. Merwin Porter, president of the Minnesota Master Plumbers' Association, represented the National Association of Master Plumbers and brought the latest code and administration news from Washington, D. C.

NAME OF ASSOCIATION IS CHANGED

The official name of the organization was changed from the South Dakota Retail Plumbers' Association to the South Dakota Master Plumbers' Association in order to be tied up more definitely with the National Association of Master Plumbers.

President Carlson presided at the convention, and following his annual report, that of the secretary-treasurer was also read. This was followed with short talks by President Carlson and Clifford F. Smith, state executive of the N. A. M. P. sub-committee on NIRA.

HEAR ADDRESS ON AIR CONDITIONING

At the Tuesday afternoon meeting Wm. J. Hennessey of Cincinnati delivered an address on "Warm Air Heating, Air Conditioning and Ventilation," in which he covered the progress made from the old time hot air furnace to the present day air conditioning and ventilating system.

This was followed by a round table discussion of public works, CWA, and certain relationships between wholesalers and master plumbers. From time to time Mr. Porter gave the convention much valuable information on knotty problems.

The Wednesday morning session was turned over to H. Merwin Porter of Minneapolis, who had recently been in Washington, D. C., at the headquarters of the National Association of Master Plumbers working on the heating code board, and he had a large amount of new code and NRA information.

A delegation of ten members of Sioux City, Iowa, Master Plumbers' Association attended the convention to hear what Mr. Porter could tell them about association matters. This delegation consisted of: H. N. Labbitt, president; M. T. Orr, vice president; Wm. J. Hagan, secretary; H. Armstrong and Leo Maroff, directors; A. M. McKenzie, A. Mullen, H. Bruns, Nat Foulk and Wm. Lavelle, members.

At the request of President Carlson, Mr. Porter told how a state plumbing code could be secured. He described in detail how the Minnesota code finally became a law last year after eight years of preliminary work with health organizations and the State Legislature.

The afternoon session was again turned over to Mr. Porter. He was greeted by a large audience eager for code information and anxious to hear what the NRA has in store for the plumber. Mr. Porter gave a detailed discussion of the Construction and the Plumbing codes, telling of the work involved in preparing and presenting these codes, the obstacles encountered, what the probable set-up would be, the methods of policing, and he also described as far as possible how business would be conducted under the New Deal.

SEND TELEGRAM OF APPRECIATION TO PRESIDENT BARRETT

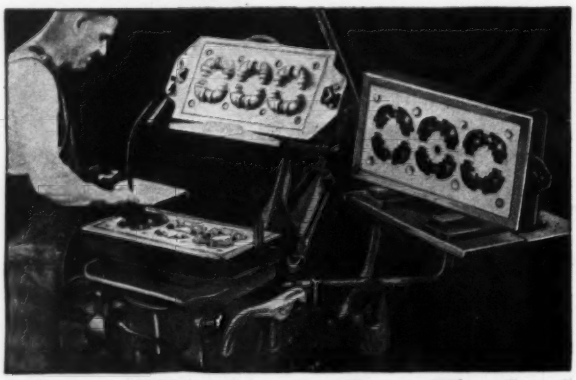
The convention sent a telegram to President Robert J. Barrett commending him and his associate officers for the excellent work they are doing, and thanking President Barrett for sending Mr. Porter to this convention, which was greatly appreciated.

The convention also passed a resolution asking the National Association to hold its 1934 convention in Chicago.

Mr. Carlson in his report as president told of the gains in membership made by zone meetings held in several cities in the state and expressed a desire to continue these meetings until all qualified dealers were under the operation of the code. Earl Traut, a delegate from Rapid City, gave expression to the opinion that the master plumbers in the Black Hills district would sign up under the code one hundred per cent.

Clifford F. Smith, in his report as state executive of the

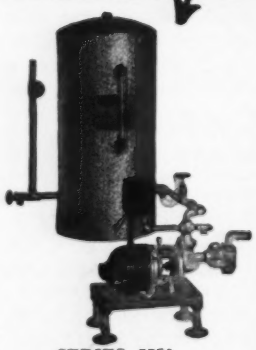
matched moulds ● MAKE PERFECT FITTINGS



DEVLIN

In making Devlin *quality* Fittings, the mould forms the outer dimension of the casting. The core, described last month, is the inner dimension. Between these the moulten metal is poured. To guarantee accuracy, full size and full weight, we use only the latest type moulding equipment and the most competent operators. More interesting information next month. Save these ads. They're written to help you.

THOMAS DEVLIN MANUFACTURING CO., Inc., Burlington, N. J.
Manufacturers of a Complete Line of DEVLIN FITTINGS and FRETZ NIPPLES



SERIES 7750

WATER SYSTEMS

Price fluctuations may come and go and the gold content of our dollar may vary from day to day, but —The *high quality* and *superior performance* of Burks Super Turbine pumping equipment stands supreme in the water supply field.

Furthermore, prices on Burks self-priming pumps were *never* lower than they are *today*. This combination of price appeal *and* deluxe quality enables our dealers to secure this business on a profitable basis.

There is no substitute for built-in quality.
Your Inquiries are *Invited.*

DECATUR PUMP COMPANY DECATUR ILLINOIS

N. A. M. P. sub-committee on NIRA, pointed out that the government through NRA has given the individual a chance to work out a better economic and social order. He urged every master plumber to get back of this great co-operative movement to end chiseling and to start the movement toward better business and living conditions.

The South Dakota Associated Contractors and the South Dakota Society of Architects and Engineers held their annual conventions in Sioux Falls at the same time as the master plumbers, and the three groups held a joint banquet at the Cataract Hotel on Wednesday evening.

President Carlson will later announce the place and date for the next annual convention of the South Dakota Master Plumbers' Association.

New Trade Literature

Folder Describes Recording Gauges

The Foxboro Company of Foxboro, Mass., has issued a folder describing and illustrating its line of recording gauges made in ranges from full vacuum to 20,000 pounds per square inch for service on steam, air, gas, water, oil, brine, ammonia, chemical solutions and other fluids. The chart of one of these recording pressure gauges will show the time, rate and amount of pressure changes at different times of day and night. It shows when the fires were banked. It furnishes data upon which to base a study of fuel consumption, boiler efficiency and heating economy as affected by pressure.

Bulletin on Centrifugal Pumps

Morris Machine Works of Baldwinsville, N. Y., has issued bulletin No. 150, outlining the special problems that are involved in the design and construction of centrifugal pumps for operation at high speed, and it also describes in detail the features of this concern's pumps that solve these problems. The illustrations include a cross section through a double-suction high speed pump, and photographs of pumps with various driving units. Typical performance curves and a table of ratings and dimensions are also included. These pumps have many applications in industrial plants, large buildings, and for special process work where a compact high speed pumping unit is desired.

Warren Webster & Co.'s Calendar for 1934

Warren Webster & Company of Camden, N. J., have again this year issued an exceedingly practical calendar, consisting of twelve sheets, 12½ x 18 inches in size, one for each month. As usual, each sheet brings not only a calendar of the current month but also of the preceding and the following month, making it exceptionally handy for reference. Each sheet also is illustrated with a high grade halftone engraving of one or more of the large buildings in which one of the various types of this concern's modern heating systems has been installed. Among the buildings shown are office buildings, apartment buildings, residences, schools, convents, hospitals, hotels, railroad terminals, university buildings, etc.

New Catalog of Soil Pipe and Fittings

The Eastern Foundry Company of Boyertown, Pa., has just issued its 1934 catalog, illustrating and describing its line of cast iron soil pipe and fittings and its cast iron plumbing specialties. The catalog consists of 24 pages, 8½x11 in. in size, and is divided into three parts, as follows: 1, Cast Iron Soil Pipe and Fittings, pages 1 to 11; 2, Cast Iron Plumbing Specialties, pages 12 to 18; 3, Compound Discount Tables, pages 19 to 24. The plumbing specialties, to which most space has been devoted, are: Adjustable soil pipe clamps and repair plates, cast iron vent boxes, boiler

stands and rings, refrigerator drains, extra heavy stable cesspools, combination rainleader and cesspool, sand trap and gas eliminator, shower drain and trap, "P" traps and "Half S" traps, sink brackets and cast iron high tanks and fire pot heaters for steam or hot water boilers to furnish domestic hot water supply.

Catalog of Pumps and Water Systems

The F. E. Myers & Bro. Co. of Ashland, Ohio, has issued its 1934 catalog under the title of "Pump Catalog No. P. 66," consisting of an exceptionally attractive book of more than 300 pages, 6x9¼ in. in size. This catalog illustrates and describes pumps for every purpose, water systems, cylinders, pipe, hose and fixtures. Special attention is called to the feature that all pumps made by this company are furnished with cog gears which reduce the power required for operation. This is a great advantage in pumping from deep wells, or in securing more water from ordinary wells and in forcing water to an elevation, or through hose and nozzle for sprinkling purposes. The water systems listed include systems for residences, summer resorts, public and private intitutions, factories, mills, apartments, hotels, villages and greenhouses. Included in the catalog are numerous charts and tables of capacities, showing amount of water discharged per stroke by a pump, friction of water in pipes, friction of water in elbows or tees, barometric pressures at different altitudes, etc., etc.

Catalog of Improved Scientific Plumbing and Drainage Appliances

Compound Injector & Specialty Co. of 419-421 North Laramie Avenue, Chicago, has just issued its 1934 Catalog, No. 35, under the title of "Dehn's Scientific, Sanitary Safeguards," illustrating and describing many of this company's new improved scientific plumbing and drainage appliances, such as deep seal floor drains, floor drains and hoppers combined, floor drains with automatic back water valves, deep seal traps for soda fountains, bars, refrigerator wastes or floor drains; adjustable large hood vent cap, adjustable flush vent pipe protector, garage floor drains with refuse separators and catch basins, heavy duty cast iron special mud, gas and oil, blow-off, gravel or catch basins; extended sanitary "T" and "Y" branches, waste and vent cast iron soil pipe fittings, Siamese twin tees, adjustable closed end closet bends, adjustable closed end closet extensions, grease separators and catch basins, and water softening and scale removing devices. The catalog consists of 16 pages, 8½x11 in. in size, and it is bound in a heavy paper cover in buff and green colors.

Chart to Determine Annual Cost for Fuel

A unique chart which enables a residence or apartment owner to determine in advance the annual cost for fuel in the operation of magazine feed boilers made by the Spencer Heater Company, Williamsport, Pa., has been designed by J. A. Waddell, Chicago representative of this concern. A computation, which is very simple, takes into consideration degree-days which for most of the principal cities in the United States are listed alphabetically on the chart folder. The chart consists of five printed scales showing the number of square feet of installed radiation, both for steam and water; degree days, tons of fuel used per season, cost per ton of fuel, and the costs of fuel for the season. The heating cost for each individual case for the season is obtained by drawing straight lines across the five scales from one number to the other, as applicable. In order to estimate the cost of heating schools or churches where fire is not maintained constantly, use is made of an auxiliary table on the same chart.

MADE FOR LONG RUGGED SERVICE

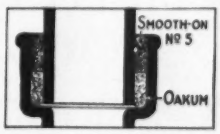
Boiler Tube Cleaners, Flue Brushes, Wire Heater Brushes, Handy Cleaner Brushes, Fire Brooms, Track Brooms.
Tempered Steel

The Worcester line is complete.
Catalog gladly sent upon request.

NRA WE DO OUR PART

WORCESTER BRUSH and SCRAPER CO.
10 AUSTIN STREET :: WORCESTER, MASS.

For caulked bell-and-spigot joints at difficult locations, use Smooth-On No. 5



WHERE caulking with lead would be difficult, as in making joints in corners, confined places and horizontal lines, Smooth-On No. 5 makes a tight joint with least effort, and no fire risk or danger of burns. Applied cold like a putty and dependable on soil, gas, steam and hot or cold water pipes. Buy in 1 or 5-lb. can, or 25 or 100-lb. steel keg.

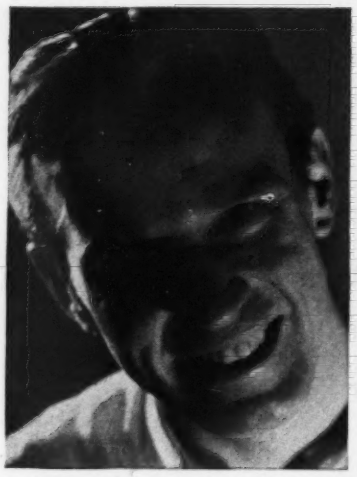
Write for the Smooth-On Handbook

136 Pages of instructions, diagrams and useful information for plumbers, heating contractors, shop managers and power plant engineers. Tells what you want to know about making tight joints at pipe connections, seams, cracks, etc., making loose parts tight, anchoring in wood, masonry and metal, etc. The methods outlined save time, labor and material and represent the best practice. Keep a copy on your desk.

Sent free on request.

SMOOTH-ON MFG. CO., Dept. 12
570 Communipaw Ave; Jersey City, N. J.

***Do it with* SMOOTH-ON**



"I never have to doctor THIS Solder"

Eagle Wiping Solder works the way you like it to work on all kinds of jobs under all kinds of conditions. Made to a well balanced formula from the highest grades of new metals. Cleaner. Smaller loss from impurities, dross or oxides. Try Eagle once and we believe you'll stay with it for life.

THE EAGLE-PICHER LEAD COMPANY • CHICAGO • JOPLIN • CINCINNATI

use **EAGLE** wiping solder

A BOILER IS AS GOOD AS THE NAME IT BEARS

We earnestly strive to make the name PENNSYLVANIA mean more to you each year. We want this name to stand for the finest quality range boiler made. We begin with the basic materials—they must be good. Methods are studied closely in order that we may improve our product. Every range boiler is thoroughly tested and guaranteed. Our jobbers' service is alert and unfailing. That's what PENNSYLVANIA means to you.

A complete line of quality Range Boilers—ALL WELDED and RIVETED & WELDED Galvanized and Everdur COPPER Boilers.

Write us for more information.

PENNSYLVANIA RANGE BOILER CO.
Established 1895
24th & Washington Ave., Philadelphia, Pa.

PENNSYLVANIA RANGE BOILERS

Convention Dates

February 5 and 6, 1934.—WEST VIRGINIA.—The annual convention of the West Virginia Master Plumbers, at Charleston, W. Va., with headquarters at Kanawha Hotel.

February 5-8, 1934.—A. S. H. V. E.—The annual meeting of the American Society of Heating and Ventilating Engineers, in New York City.

February 5-9, 1934.—I. H. V. E.—The third annual International Heating and Ventilating Exposition at the Grand Central Palace in New York City.

February 6, 1934.—MINNESOTA.—The fortieth annual convention of the Minnesota Master Plumbers Association, at St. Paul, Minn., with headquarters at the St. Paul Hotel.

February 5, 6 and 7, 1934.—OHIO.—The forty-third annual convention of the Ohio State Association of Master Plumbers, at Toledo, Ohio, with headquarters at the Commodore Perry Hotel.

March 5-9, 1934.—A. O. B. A.—The annual convention and oil burner show of the American Oil Burner Association, at the Commercial Museum in Philadelphia, Pa.

March 12, 1934.—KANSAS.—The annual convention of Kansas Master Plumbers Association, at Wichita, Kans. The date is tentative.

March 15, 1934.—I. O. M. A.—The tenth annual convention of the Independent Oil Men's Association of New England, at the Statler Hotel, in Boston.

March 21, 1934.—IOWA.—The annual convention of the Iowa Master Plumbers Association, Inc., at Waterloo, Iowa.

March 26, 1934.—ARKANSAS.—The annual convention of the Arkansas State Master Plumbers' Association, in Little Rock, Ark., with headquarters at the McGehee Hotel.

April 10, 1934.—MASSACHUSETTS.—The annual convention of the Massachusetts State Association of Master Plumbers, at Boston, Mass., with headquarters at the Copley-Plaza Hotel.

April 16 and 17, 1934.—TEXAS.—The annual convention of the Associated Master Plumbers of Texas, at Galveston, Texas, with headquarters at the Buccaneer Hotel.

April 16, 17 and 18, 1934.—NEW YORK.—The annual convention of the New York State Association of Master Plumbers, in New York City, with headquarters at the Hotel Pennsylvania. All sessions will be held in the convention hall of that hotel.

May 5, 1934.—I. M. P. A.—The annual convention of the Idaho Master Plumbers' Association, at Boise, Idaho.

May 7 and 8, 1934.—FLORIDA.—The annual convention of Florida State Association of Master Plumbers and Heating Dealers, Inc., at Gainesville, Fla., with headquarters at the Graham Hotel.

May 21 to 24, 1934.—C. M. P. A.—The annual convention of the California State Master Plumbers' Association, at Sacramento, Calif., with headquarters at Hotel Senator.

May 28 and 29, 1934.—MONTANA.—The annual convention of Montana Master Plumbers' Association, at Miles City, Mont.

Illinois—

(Continued from page 122)

A number of prominent visitors were at the convention, including H. O. Green of Tulsa, Okla., treasurer, and Joseph G. Hildebrand, Washington, executive secretary, of the National Association of Master Plumbers; John P. McCoy, Henry Weber, F. C. Kuetemeyer and Otto Waskow representing the Wisconsin and Milwaukee Associations; Frank J. Murphy, Ed. Monteath, Charles Burgess, and Robert Hunt, representing the Missouri and St. Louis associations; G. J. Palmer, president of the Iowa Master Plumbers' Association. Mrs. Robert Liss of Chicago, president of the Women's Auxiliary of the National Association of Master Plumbers, also was present.

The code discussion at this convention is reported on pages 21-23. Abstracts of other interesting features of the Illinois program will be covered in a later issue.

ACTIVITIES

By DOROTHY EDWARDS

Denver Auxiliary Gave Christmas Party

The Ladies' Auxiliary of Denver, Colo., met on December 13 with Mrs. J. J. Laverty, who served a delicious luncheon at 1 p. m. After the regular business meeting was held, cards were played, with honors going to Mrs. F. X. Bordeau, Mrs. V. A. Kandorf and Mrs Hanlin.

The annual Christmas party was held on December 23 at the Aramor Hotel. A turkey dinner with all the trimmings was served to 60 persons at 7 p. m. There was a Christmas tree, and gifts were distributed to all those present. Cards were played, with Mrs. Bordeau taking first honors, Mrs. H. Mellema second, and Mrs. Fred Samson the consolation prize. Mr. Guy Stocking won first prize for the men, Mr. A. Adshade second, and Mr. F. X. Kriedl the consolation prize.

Queens Auxiliary Elects Officers

Mrs. Henri Billharz

The following officers were elected at the December meeting of the Women's Auxiliary to the Queens Association of Master Plumbers: Mrs. Henri Billharz, president; Mrs. Charles Budrie, first vice president; Mrs. William E. Foley, second vice president; Mrs. Joseph Mittasch, treasurer, and Mrs. Lawrence J. Redmond, secretary. The trustees were re-elected and are as follows: Mrs. Nicholas D. Donohoe, Mrs. Joseph S. McNamara and Mrs. Joseph W. Peter. The special committee appointments were made as follows: Mrs. John Korinek, publicity; Mrs. Charles Hochstatter, assisted by Mrs. Joseph W. Peter, entertainment; and Mrs. E. A. Houghton, historian.

Salem Auxiliary Assists Needy Families

The Salem, Ore., Women's Auxiliary has held two meetings this fall and winter. The first meeting was at the home of Mrs. J. A. Bernardi, president. Following a lovely luncheon, Mrs. Fred Bernardi was admitted into the auxiliary as a new member.

Mrs. J. A. Bernardi also entertained the members at their second meeting. This time she announced her acceptance of the appointment by Mrs. Robert Liss as National director. Miss Vivian Widmer, the first delegate from Oregon to the national convention at New Orleans, gave a very interesting talk.

On January 12 the ladies met again at the home of Mrs.Bernardi. The afternoon was spent tacking a quilt which is to be given to some needy family. This auxiliary has now completed 2 quilts of crib size and 2 quilts of ¾ bed size. Refreshments were served late in the afternoon.

Illinois Women's Auxiliary Holds 11th Annnal Convention

The eleventh annual convention of the Illinois Women's Auxiliary was held in conjunction with that of the Illinois Master Plumbers Association at Quincy, Ill., on January 16, 17 and 18.

The business session was held on Wednesday, January 17, in the Hotel Lincoln-Douglas. Mrs. C. C. Rosenfield of Rock Island, state president, was in the chair and after thanking the local ladies for their reception appointed the following committees: Entertainment: Mrs. Eleanor Best Ochsner, Quincy, and Miss Ruth Ernst, Quincy; Memorial: Mrs. Dick Johnson, Champaign; Auditing: Mrs. Henry Swade, Chicago; Mrs. H. P. Reger, Chicago, and Mrs. Wm. F. Hildeman of Chicago Heights; Nominating: Mrs. Robert Liss, Chicago; Mrs. Fred Bailey, Rockford, and Mrs. Anson Dieterle, Sterling.

The convention was honored by the presence of National President Mrs. Robert Liss and National Parliamentarian Mrs. H. H. Diedesch, both of Chicago.

General business and committee reports being disposed of, the auxiliary agreed to adopt the "Students' Loan Fund" and several parties will be held by various locals during the year to raise funds for it. Loans have already been made to two daughters of master plumbers to help them in their educational endeavors.

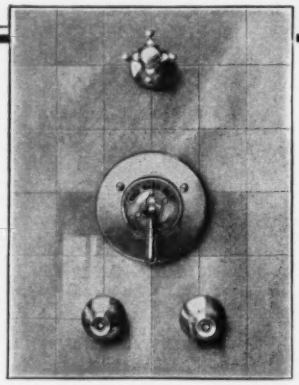
The following new officers were elected for the coming year: President, Mrs. Fred Hager, Chicago; first vice president, Mrs. Henry Swade, Chicago; 2nd vice president, Mrs. Dick Johnson, Champaign; 3rd vice president, Mrs. A. L. Wargo, Eureka; secretaries, Mrs. Oscar Larson, Chicago, and Mrs. J. Zajicek, Cicero.

Mrs. C. C. Rosenfield, the retiring president, was presented with a fully fitted traveling case.

The entertainment features were excellent and greatly enjoyed by the ladies. Monday evening they attended the "Old Heidelberg" party of the master plumbers' association. On Tuesday evening they were tendered a luncheon and bridge party in the Lincoln-Douglas, and in the evening joined in the Keno Party staged by the association.

Wednesday they were conveyed to the Quincy Country Club, where they were the guests at a luncheon and musicale given by the Illinois Master Plumbers' Association, and

LEONARD
THERMOSTATIC
MIXING VALVES



THERE is now available a New Series of Leonard Valves that are within the cost range of every householder who desires the comfort, pleasure, and safety of thermostatic control on Shower Bath, Tub, or other Hot Water outlets.

You will make scores of profitable sales with these new "Leonards." Write for literature which gives full information.

Let us tell you more about it.
We will gladly send you literature.

LEONARD-ROOKE COMPANY
Incorporated 1913
PROVIDENCE RHODE ISLAND

"In Conference"

at the
MELBOURNE HOTEL

The life blood of a business house – its sales force – seated at the conference table planning the year's campaign. They chose the Melbourne because of the secluded quiet of its conference chambers – its excellent food – its central location with the finest theatres in St. Louis within one block – and, in these days of shortened budgets because of Hotel Melbourne's mighty reasonable rates.

Your sales conference will accomplish more, at less cost, if held at the Melbourne Hotel.

400 ROOMS *all with bath* $2.50 *and more*
ON U.S. HIGHWAYS 40 AND 61
with excellent garage facilities
O. P. GREATHOUSE *Manager*

ON LINDELL BLVD. AT GRAND AVE. ST. LOUIS

in the evening they attended the annual dinner dance of the Association in the Grand Ball Room of the Lincoln-Douglas Hotel.

Detroit Auxiliary Gave Christmas Party

The Detroit, Mich., Women's Auxiliary held a very delightful Christmas party for the members of their families. Each member brought a specified dish for a pot luck supper. The decorations were lovely, with Mr. Schohofen and Mr. Nawrat sharing honors on this job.

Following refreshments, the stage was set for an entertainment given by the sons and daughters of the master plumbers. The children were very good and, in fact, surprised their parents with some of their performances. After the entertainment, dancing was enjoyed until a late hour.

Milwaukee Auxiliary Installs New Officers

The Women's Auxiliary of the Milwaukee Master Plumbers' Association met at the Elks' Club on January 8 to install its newly elected officers. Mrs. Rose Friend, National historian, officiated at this ceremony and was assisted by Mrs. Otto A. Waskow and Mrs. F. G. Colwell. The following are the officers: Mrs. Walter Dusold, president; Mrs. Robert Stemper, first vice president; Mrs R. H. Meyer, second vice president; Mrs. Jacob Schuh, third vice president; Mrs. George J. Stoehr, recording secretary; Mrs. Edwin Thill, corresponding secretary; Mrs. Peter Vogt, treasurer; Mrs. Rose Friend, chaplain; Miss Clara J. Wittig, publicity. Members of the Sunshine Club Committee are: Mrs. George Bronenkant, chairman, and Mrs. O. H. Dittmer. Mrs. A. P. Backes is chairman of the membership committee, assisted by Mrs. David Stern. The relief committee consists of Mrs. Chas. Pelunek, chairman, and Mrs. O. H. Waskow and Mrs. F. C. Westfahl. Sergeants-at-arms are Mrs. J. E. Mergenthaler and Mrs. J. J. Mueller. Directors are Mrs. F. C. Kuetemeyer and Mrs. Henry Weber.

Rock Island-Moline Auxiliary Elects Officers

The Rock Island-Moline Auxiliary meeting was held at the home of Dorothy Lamp, Rock Island, on January 8. A report on baskets of food and articles of clothing that were distributed to needy families at Christmas time was given by Miss Lamp. A new member, Mrs. Fred Bennett of Rock Island, was welcomed to the auxiliary.

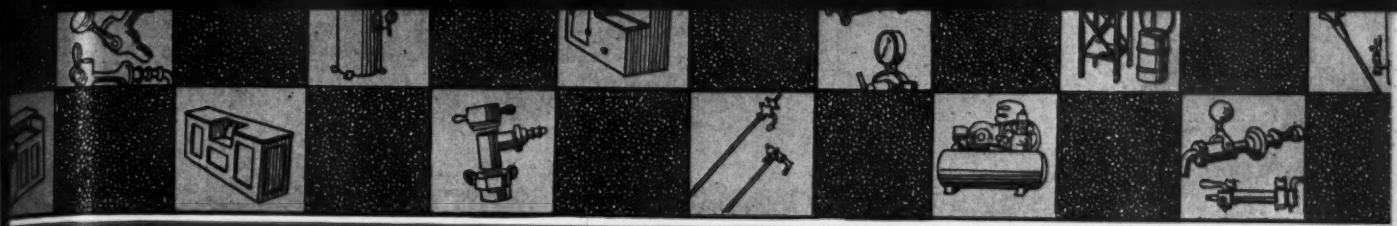
Mrs. Albert Rosenfield was elected president at the annual election of officers; Mrs. Fred Bennett, vice president; Miss Dorothy Lamp, recording secretary and treasurer, and Mrs. C. C. Rosenfield, corresponding secretary.

Following the transaction of business, the hostess served refreshments. Mrs. Albert Rosenfield, the newly elected president, will be hostess at the next meting on Monday, February 12, at her home, 2029 29th Street, Rock Island.

North Shore Auxiliary Keeps Up Its Activities

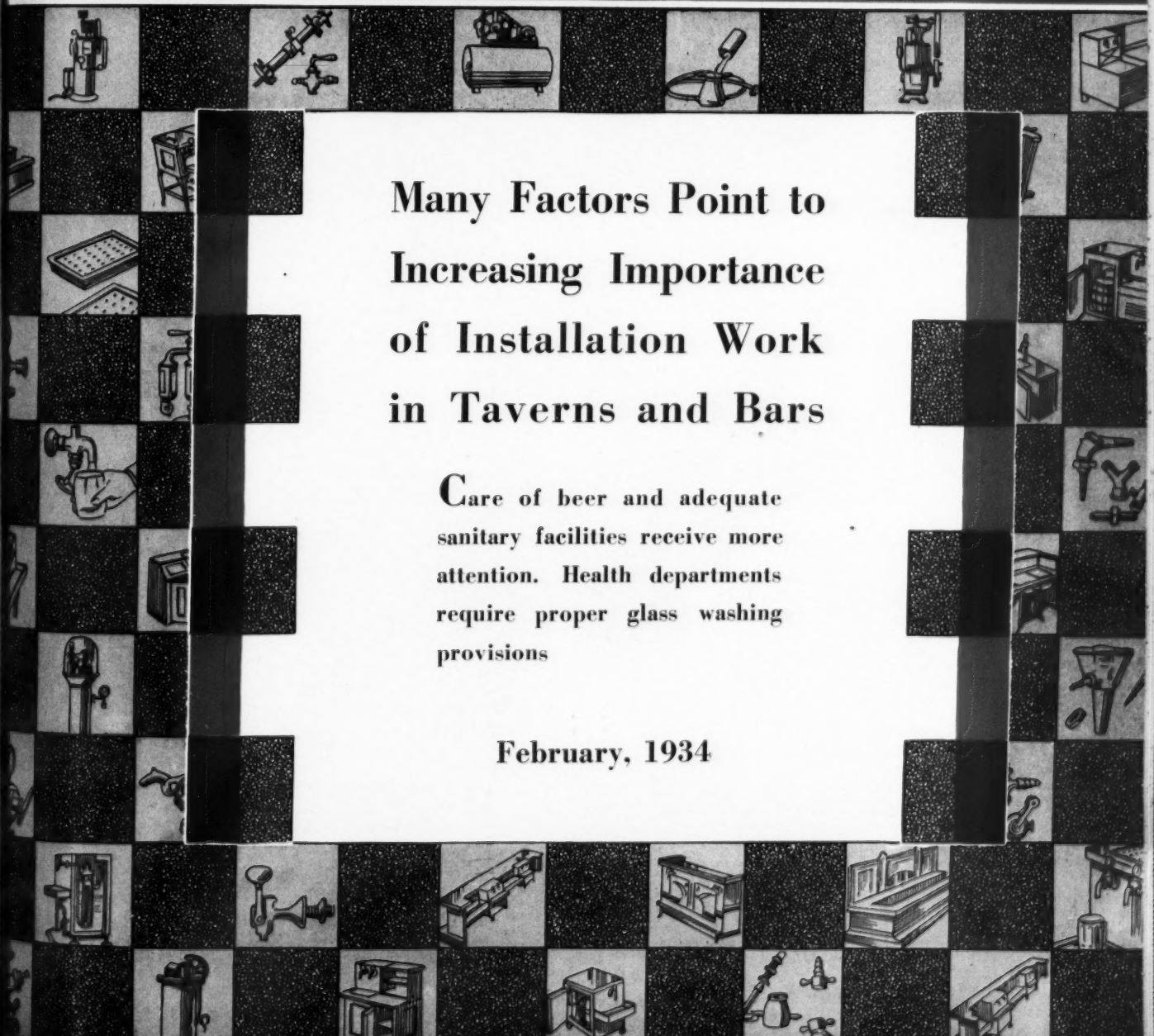
The Women's Auxiliary to the North Shore Plumbing Contractors' Association of Chicago has continued its activities in spite of existing business conditions and has had only one resignation during the past year. The members cut the dues from $3.00 to $1.50.

Social activities were confined to regular meetings with the exception of the annual dinner last February and one evening party. Plans are being made for this year's annual affair to be held next month. Officers for this year are Mrs. Julia McKenna, president; Mrs. Fred Flader, vice president; Mrs. E. Norman, treasurer, and Mrs. George Kearney, secretary.



BEER *and* BAR EQUIPMENT

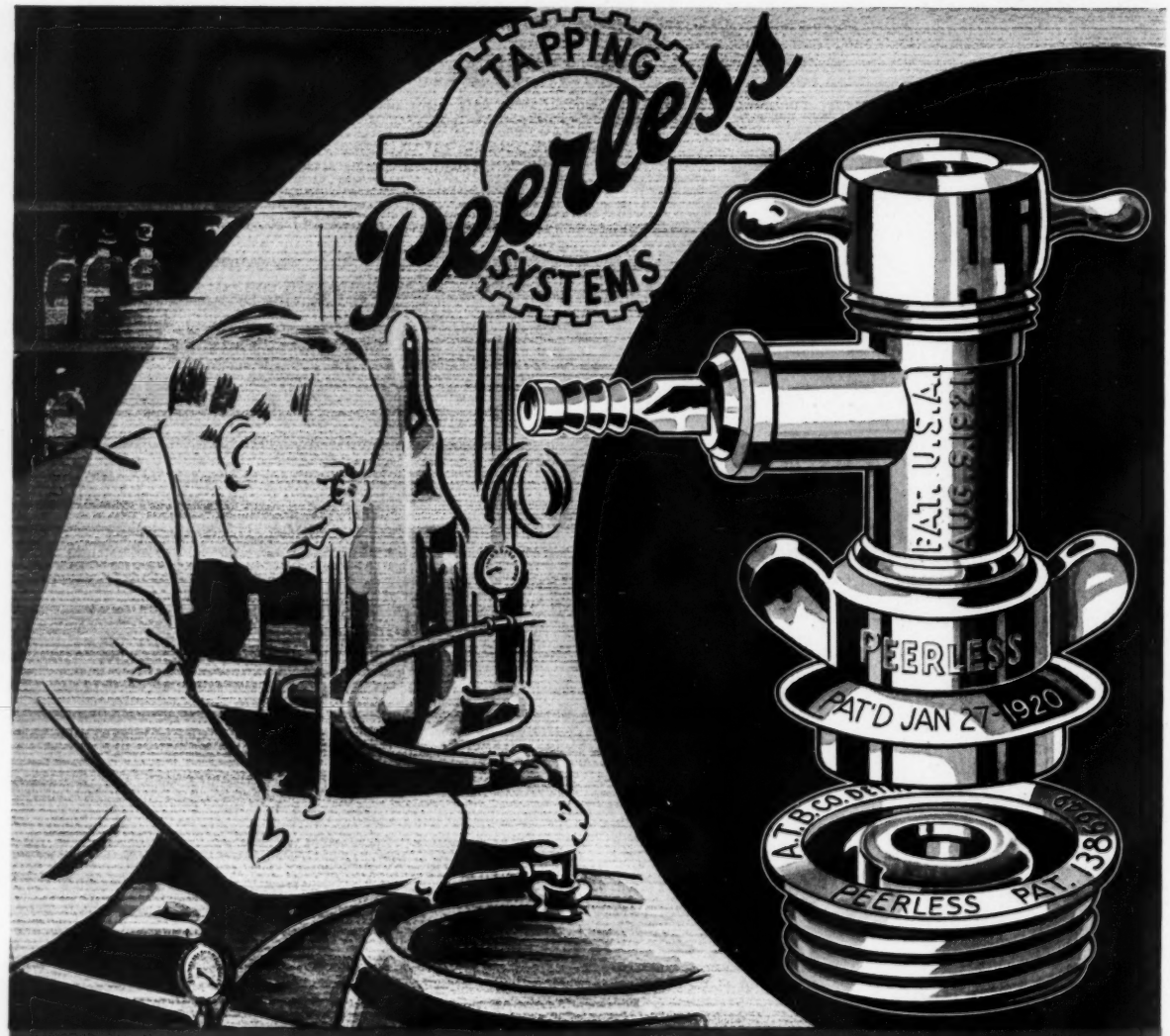
SECTION OF DOMESTIC ENGINEERING



Many Factors Point to Increasing Importance of Installation Work in Taverns and Bars

Care of beer and adequate sanitary facilities receive more attention. Health departments require proper glass washing provisions

February, 1934



PROVED ★ 120% SAFER ★

The majority of Brewers and Dispensers can't be wrong. • The great majority of Brewers and Dispensers always preferred the genuine Peerless Tapping System . . . that is why we say it is standard. • Now, a change in design of the Peerless Tap has more than doubled its sealing qualities—so that today it reaches a point of perfection so far in advance of the field that no man interested in the safe delivery of beer can afford to neglect the protection it gives the beverage. • Write for our folder outlining tests.

AMERICAN TAP BUSH COMPANY, DETROIT, MICHIGAN • Manufacturers of Beer Handling Equipment for over 38 years and makers of the famous Peerless Portable Beer Cooler retailing for $30.

GLASSES to WASH!

Fig. 1—The above illustration shows glass washing facilities in a bar, as well as a storage cabinet

Glasses . . . an endless procession of glasses to be washed in the busy tavern. And each glass must give sparkling evidence that no deposit of grease or grime will spoil the flavor of the amber brew it will hold

OWNERS of restaurants and food serving establishments have been educated by their respective departments of health to understand that glassware washed in good soapy water at a high temperature is sufficient to sterilize it. Many of these same eating places, since the legalization of beer, have taken on the dispensing of this beverage and, with it, they have been advised that the slightest trace of soap in the glasses will cause the beer collar to go flat. Breweries advise their retail distributors that beer should be served in wet glasses and that glasses or other containers should not be washed in soap. Retailers are advised by their breweries to rinse glasses in fresh cold water just before pouring the beer into them, "as this allows the foam to show and stand up much better."

As another angle to this, a bulletin from the California State Department of Public Health points out that this information is not in conformity with the State law in California which requires the sterilization of drinking utensils. This bulletin goes on to say that the State Board of Public Health does not specify any single method of sterilization that must be employed but that it is insistent all drinking utensils in public places be thoroughly cleaned before using. There is always a possibility that communicable diseases may be transmitted through unclean glasses.

A bulletin from the division of health, Dayton, Ohio, states that "The return of beer has presented a difficult problem in several ways. The present regulations require

that a beer license to sell by the glass shall only be issued to a restaurant and the applicant must first obtain a restaurant permit from the Division of Health. The biggest problem has been the installation of adequate dishwashing facilities especially for the beer glasses.

"We feel that it is very important from a health standpoint that all beer glasses be properly washed and sterilized after each customer, and it is our opinion that such operations be carried out in separate equipment for the use of glassware only."

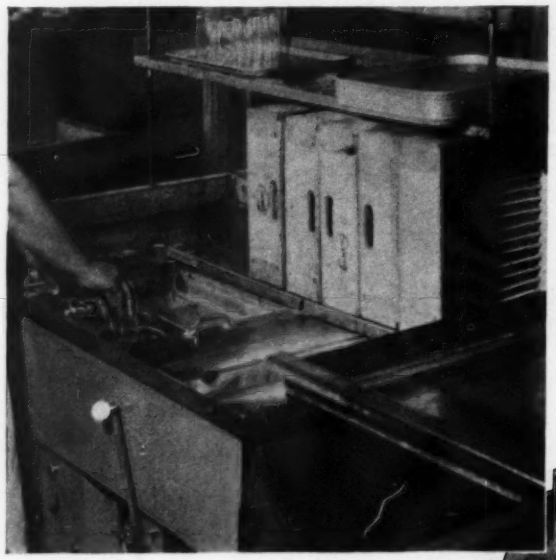


Fig. 2—Here are examples of glass washing equipment which show how it operates. Notice the brushes inside of the glasses

Fig. 3—"It is our opinion that glass washing operations should be carried out in separate equipment for the use of glassware only"

The answer to this problem of saving the beer foam and at the same time sterilizing glasses apparently has been solved by the Wisconsin health authorities. Their requirements for taverns and other places serving beer are as follows:

All glasses or other containers used in serving beer or carbonated beverages should be thoroughly cleansed immediately after use and before being used again by an approved method.

Washing of Glasses and Containers. All glasses and other containers used in serving should be thoroughly cleansed in hot water and soap suds, rinsed and dried at the end of each day's operation.

All glasses should be cleansed and sterilized by one of the following methods:

1. Rinsing in cold water in first compartment or sink, then immersing for at least one minute in hot water maintained at a temperature of 170°F. contained in second compartment or sink, and then placing on a drain board top down for draining and drying.

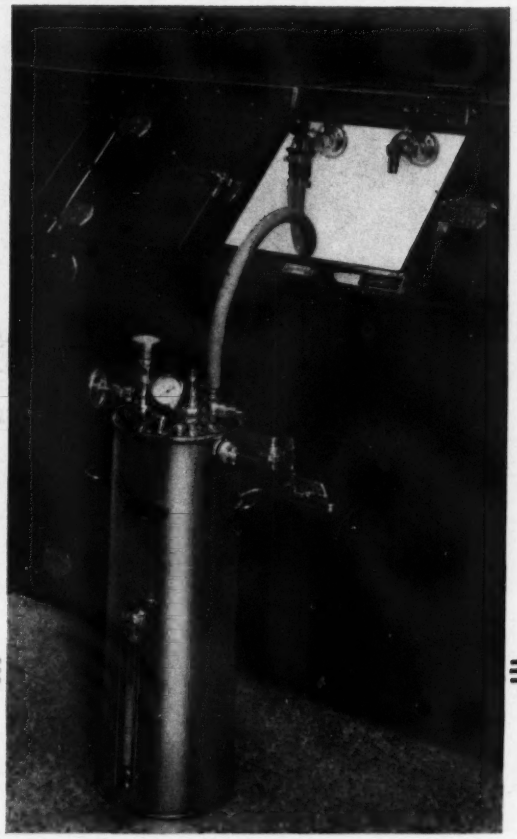
2. Rinsing in cold water in first compartment or sink, and then immersing for at least one minute in chlorine solution contained in second compartment. Such chlorine solution to contain not less than 200 parts per million of available chlorine when first added, and not less than 35 parts per million of available chlorine at any time thereafter. After which the glasses or containers are removed and placed on the drain board top down for draining and drying.

Preparation of Chlorine Solution. The convenient commercial chlorine preparations on the market are of two types: liquid and powder. The following table gives the amount of a liquid containing 3½ per cent available chlorine and a powder containing 50 per cent available chlorine required to make ten gallons of the required strength solution.

10 gallons of 200 p.p.m. chlorine solution require 8 oz. (½ pint) of a liquid containing 3½ per cent available chlorine.

10 gallons of 200 p.p.m. chlorine solution require ½ oz. (one level tablespoon) of a powder containing 50 per cent available chlorine.

Use of Chlorine Solution. Each ten gallons of the sterilizing solution will effectively sterilize 1,000 glasses or containers, after which it is necessary to prepare a new solution. If this number is not rinsed during a day's operation, the solution should be discarded at the end of the day and a new solution be prepared at the start of each day.



Clean Coils *Make Clean Beer*

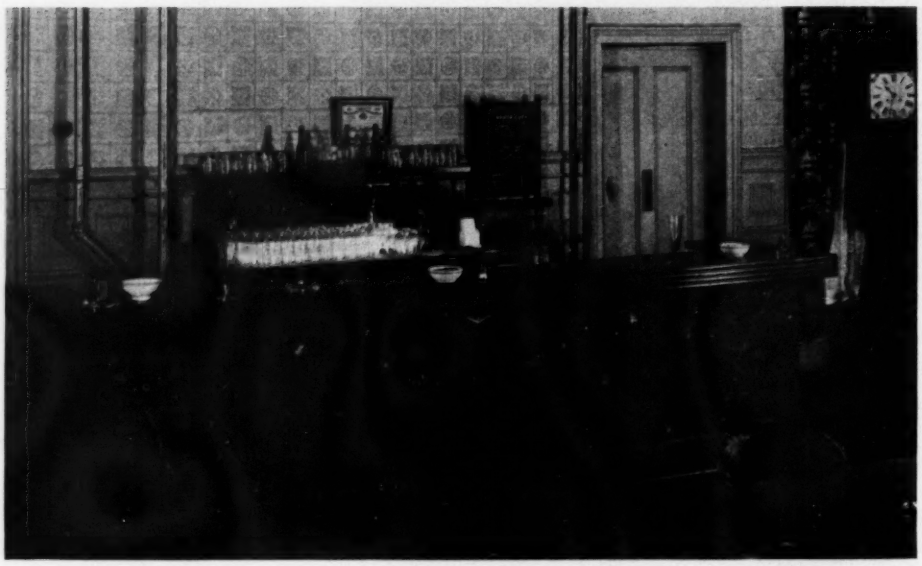
TWO of the most important problems confronting those who are interested in the proper serving of beer come in the education of the tavern owner to a realization of the importance of keeping beer kegs, lines and coils at a temperature of from 40 to 42 deg. Fahr. at all times and of cleaning beer coils, lines and tap rods in a thorough manner, so as to insure the serving of fresh and palatable beer. Incidentally, the fact that some tavern owners have not carried out these important points in practice has led to the refusal on the part of some brewers to sell their beer to offending tavern keepers. Reports are to the effect that in a number of other cases where large dispensers of beer are concerned, the brewers of the beer served have been forced to perform this coil cleaning service themselves in order to maintain the quality of their brew up to the time it reaches the consumer.

There is a considerable amount of sedimentary residue in all beers and small particles of this sediment attach themselves to the inside of the beer coil in a scale-like formation until they have formed a complete lining within the tubing. This is known as beer stone. While the nature of this so-called beer stone is not to prevent the multiplication of bacteria, it will curb the oxidation.

There are various methods of cleaning beer coils and tubing. The illustration at the top of this page shows a portable steam coil cleaner connected to a beer faucet and ready for steaming out the beer lines. In this instance, the line is cleaned out with wet steam, this being released from the steam generator at a pressure of 120 lb.

(Continued on page 143)

Fig. 1—The illustration at the top of this page shows electric steam coil cleaning equipment being used in connection with beer drawing equipment



Minneapolis Dealers Secure New Regulations for Taverns

PLUMBING dealers handling beer and bar equipment have found it advantageous to check up the regulations of their city and health authorities covering taverns. While in some cases, adequate provisions existed covering water supply services, sanitary conveniences and ventilating requirements for such taverns, in the majority of cities new or revised regulations are needed.

When one recalls the hundreds of thousands of taverns opened up following the authorization of beer, it is easy to understand the magnitude of the task thrown upon city and health officials and upon inspectors in enforcing existing regulations or passing new rules. And furthermore, adequate facilities in these taverns, requires from 1,250,000 to 1,400,000 plumbing fixtures, according to reliable estimates so that the interest and the importance of the plumbing dealer is readily apparent.

Previous articles in this section of DOMESTIC ENGINEERING have emphasized the importance of this subject to the plumbing dealer. Examples have been given of the necessary minimum standards which should be required and should be enforced in accordance with modern recognition of the importance of plumbing to health. Any dealer will find it worth while to study this subject and to turn back to these earlier articles, in case conditions in his home city are not meeting minimum requirements.

The following interpretation of a new city ordinance, designed to meet this condition, and passed with the assistance of the plumbers, is sent to us by a reader in Minneapolis, Minn. He encloses a copy of that new ordinance and in the following, he shows the importance of this subject to dealers and what those in Minneapolis worked to secure.

He writes that the return of the selling of beer came with a suddenness and magnitude which caught many officials and many communities with little, if anything, in the way of ordinances and rules, to properly cope with the situation. After the first wild demand, both dealers and officials settled down to a study of the situation, with the result that laws and ordinances have since been passed which will have an important bearing upon the sale of beer and other liquors.

Naturally, these laws and ordinances are not retroactive, but existing licenses have been issued for certain specified periods and when these periods shall have expired it will then be necessary for the dealers in beer to conform to the existing ordinances if they propose to continue in business.

It is also true that the first rush brought into being a number of stores and dealers who had the idea that the sale of beer would be the golden opportunity. Many of them, poorly financed or prepared to run a business, have since awakened to the fact that this was a delusion,

many of the places have changed hands and many of them have closed because purchasers could not be found.

Plumbing contractors, journeymen plumbers and plumbing inspectors were instantly alive to the fact that stores selling beer must have proper and sufficient plumbing equipment and the lack of such provisions in the existing ordinances resulted in numerous meetings and conferences by and between the plumbing contractors, journeymen plumbers, plumbing inspectors and city officials, such as the aldermen and health commissioner.

That section of the Minneapolis ordinances relating to plumbing now contains complete and detailed information relative to the plumbing requirements in those buildings where beer is on sale.

Each place shall be equipped with proper sinks, running hot and cold water, and with sinks close to place where beer is drawn. Such sinks must be of the two compartment type.

The word "restaurant" is used in the ordinance because the Minneapolis ordinance provides that beer can only be sold in restaurants or places where food is also sold.

SMALL SANDWICH SHOP REQUIREMENTS

In the matter of toilet rooms, the small sandwich shops (less than 300 square feet in area) can get by with one toilet room, but the larger places must have two rooms.

Note the provision relative to toilet rooms being equipped with floor drains; also water closet bowls must be of the extended lip pattern and equipped with open front seats without covers. Lavatories and urinals are also required.

The floors and sidewalls to a height of at least 3 feet must be of non-corrosive and non-absorbent materials, the reason for which is apparent to anyone at all familiar with the abuse of plumbing equipment in public or semi-public buildings.

Whenever possible, toilet rooms are not to be located in basements or cellars, but when so located they must be fitted with wide stairs and hand railings for safety.

The plumbing code is, of course, a part of our regular building ordinance and provides that in every building hereafter erected or altered in which there is installed a water closet or urinal compartment, the aggregate area of windows for any such water closet or urinal compartment shall be not less than six square feet between the stop heads, and one-half of such area of such window shall be so arranged as to open.

If in the opinion of the inspector of buildings it is impractical to install such window as above required, he may allow the installation of a local ventilation system. The piping for such system shall not be less than forty square inches in area.

A study of the provisions of the Minneapolis ordinance will show that the plumbers, working as a united industry, have prepared an ordinance which is reasonable but which at the same time provides all that is essential in plumbing equipment.

It was also found that there was objection to some of the beer stores because of the fact that they permitted dancing, whereupon the aldermen amended the existing

(Continued on page 142)

The NEW American
VISUAL
GLASS WASHER

Rinses each glass before serving - - so the customer can see it RINSED!

Isn't it natural, in your own home where you know the glasses are clean, you ALWAYS RINSE THE GLASS BEFORE USING!

Rinsing glasses in the regular under bar rinse tank leaves a doubt with the beer drinker as to how many other drinker's glasses were rinsed in the same water.

Fits any size glass or Stein. Instantly attachable to any Bar. No Plumbing Necessary.

PRICE COMPLETE
$19.50
WITH ALL CONNECTIONS

All recognized beer serving authorities agree that to serve a proper glass of beer, the glasses must be rinsed immediately before serving.

Among Our Products:

FLEX-PIPE THE ALL METAL FLEXIBLE BEER HOSE, SANITARY AND PERMANENT.

AMERICAN AUTOMATIC ELECTRIC BEER PUMPS
ALL STEEL Super Constructed BEER COOLERS
and a complete line of beer DISPENSING EQUIPMENT

EVERYTHING FOR BEER and THE BAR AT ONE PLACE

AMERICAN COOLER CO.
37 W. 19TH STREET NEW YORK CITY

What Readers Ask

Here is a department devoted to a discussion of questions which are selected as of outstanding interest to dealers of beer dispensing equipment

How to Store Beer

To the Editor:

Being in the beer equipment business, some of my customers often ask me how they should store their beer in order to obtain the best results. May I ask you to give me some information about this problem?

Iowa. M. C. J.

To the Reader:

It is of utmost importance to store beer at the proper temperature in a refrigerated room. In summer it should be kept at an even temperature of from 36 to 40 degrees Fahr., in winter somewhat higher, namely, 40 to 45 degrees.

If beer gets warm the carbonic gas constituting the life of the beer is freed and the pressure on the kegs increased to such an extent that wooden kegs are liable to sprink a leak, sufficient to allow the gas or even the beer to escape. When such a keg is tapped, even when it has again been cooled to the proper temperature, the beer is flat even though the keg may not show any outward sign of being leaky. Also, when beer gets warm in a wooden keg it is apt to take on an objectionable flavor derived from the pitch which is used in lining the barrel. Keg beer, if allowed to stay warm any length of time will lose its stability; that is, it will become turbid and unpalatable much sooner than otherwise would be the case.

Draught beer as well as bottled beer should be disposed of in the order received. Beer at best will keep but a limited time, and therefore must not be allowed to become too old. Beer should be stored in such a manner that the oldest beer can be taken out first.

How Much Beer in a Barrel?

To the Editor:

The article under the above title in the December number of Domestic Engineering reminds me of my attempt some time ago to answer the question, "How much is a barrel?"

I came to the conclusion that "Nobody knows."

So far as I was able to learn the liquid barrel is not a fixed unit anywhere. No value for a barrel has ever been adopted by Congress in the United States and it appears that the same is true in Canada. I was informed that in the Internal Revenue Bureau and in the Custom Service every barrel must be gaged because of the fact that there is no fixed standard.

The barrel varies all the way from 30 to 43 gallons in the United States. One unit as given is 31½ gallons of 4.211 cu. ft.

The British barrel of wine and brandy is given as 31½ gallons and also as 36 gallons. Take your choice. Personally I prefer the 36 gallon size, provided I can obtain it at the same price.

Another unit is given as 31 gallons—a U. S. A. measure.

Still another unit as used all over the world by the Standard Oil Company in the measurement of refined oil is 42 gallons per barrel.

A barrel of flour in the United States is equivalent to three bushels or 3.75 cu. ft.

Another unit, the "dry" barrel in the United States is gigantic in size—21½ bushels or 26.756 cu. ft. In other words, this unit is more than seven times as large as a barrel of flour and flour, you know, is supposed to be dry.

It is reported from one source that the standard United States barrel for dry commodities such as fruits and vegetables must contain 7,056 cubic inches. This figure, according to my slide rule, is about 4.08 cu. ft.

In the United States a beer barrel is supposed to contain 36 beer gallons of 282 cu. in. per gallon. But according to the December article which inspired me to write this, that is not always true. "Sometimes 2½ gallons short," says the author.

To complicate matters still further the State of Pennsylvania has a measure of its own, namely, 32 gallons per barrel.

Beef and pork are sometimes sold by the barrel and when they are a barrel is supposed to contain 200 pounds.

In Spain one barrel of raisins weighs 100 pounds.

In Malta a customs barrel contains 11.4 gallons.

That is as much as I learned about barrels. If I have omitted any "standards" I shall be glad to know what they are

Newark, N. J. S. F. W.

Regulations—

(Continued from page 141)

ordinances so as to distinguish between the two types of stores—those selling beer and those selling beer and catering to the dancing public, in which case their place of business is called a "tavern" and it is surrounded by much-needed restrictions

It will be noted that an "on sale" license costs $50.00 with an additional fee of $200.00 for a tavern license.

And all of this brings up another vexing problem. Minneapolis did have in the old days and still has a certain area in the downtown section where intoxicating liquors can be sold. Many licenses have been issued to stores and taverns outside of this area. Some of them

have been fitted up in the expectation that the limits would be expanded. There is a great deal of uncertainty regarding this and the result is that nothing is now being done towards the improvement of existing buildings or the erection of new buildings, because owners and proprietors are waiting to find out whether or not their "corners" will be inside or outside of the limits.

Just as soon as this is determined we anticipate a revival of activity greater in volume than the one which resulted when beer came back early in 1933.

Clean Coils—

(Continued from page 139)

The high temperature used in cleaning coils with steam is employed with the idea of killing the bacteria in the line with which it comes in contact. The pressure in back of the steam is for the purpose of forcing sediment and other impurities out of the line being cleaned.

As already indicated, there are several methods of cleaning coils. Another one employs what may be termed a mechanical method. In this case, small particles of special material are forced through the beer lines and coils with water pressure. These particles in flowing through the tubing, rub against the sides and loosen the *impurities* which, in the process are flushed out.

Still another method of cleaning beer coils is that of using chemicals, the purpose of which is to act upon the impurities so that they will be rendered sterile. Obviously, the action is to loosen and wash out the impurities clinging to the sides of the tubing.

Beer must be looked upon as a beverage just as liable to spoilage as is milk. No one would think of running milk through piping that is not regularly cleaned because it is generally understood that milk spoils easily and that if there is soured milk clinging to the container, the good milk will be spoiled also. The same thing is true in the case of beer. If fresh beer is tapped with dirty tap rods and if the beer is drawn through dirty coils and tubing, it will be spoiled. The importance of cleaning coils in connection with the dispensing of good beer cannot be too firmly impressed upon the dispenser's mind.

Recommendations are that beer coils should be cleaned at least once a week, preferably oftener. Unless this is done the sediment becomes rancid enough to taint the flavor if not utterly ruin it. Unless frequently and regularly cleaned, one cleaning process will not remove the entire depth of the coating with the result that the worst part of the sour sediment remains in the pipes to taint everything that flows through it. In addition, it is recommended that beer pipes be rinsed out thoroughly with water each day by disconnecting them at the taps and by connecting the two beer hoses together with a special union. A hose is connected between the water faucet and the beer faucet. By opening both the second beer faucet and the water faucet, city water is forced through the beer coils and piping under city water pressure. Obviously, the discharge from the second beer faucet is wasted to a convenient drain. If only one beer line is installed, water may be run through it either from the tap end or from the bar end.

★ Here *Is* Something *NEW*

SELL the Master Liquid Meter to the beer dispenser who is dissatisfied with his beer dispensing equipment and you have immediately landed a regular customer—because it **works.**

By that we mean it eliminates all waste of beer . . . no matter what size container is used, the correct amount of beer is drawn . . . makes possible a check on beer in the barrel . . . it actually checks the number of gallons drawn against the amount of money taken in.

That's why the Master Liquid Meter is so easy to sell. It's something new and it's interesting beer dispensers everywhere.

Write today for full information. Dealers everywhere are doing it.

LIQUID METER & REGISTER CO.
844 W. Jackson Blvd., Chicago, Ill.

PATENTED

★*The*
MASTER
LIQUID METER

GUARANTEE
Fits all standard equipment. No necessity of making any change in coils, cooler or novelty box. Simply disconnect old faucet and connect new one. Two minute's work.

for the dispenser

Beer and water faucets—Straight and bent tapping rods—One, Two and Three way distributors — Mixing switches—Distributing Y fittings—Hose nipples and unions—Air cocks—Ice box couplings—Outlet plugs—Picnic pumps—Keg top cooler pumps—Brass bar rails—Overflows and sockets—

for the brewery

Beer hose sight feed fittings—Round way stop cocks—Government Lock cocks—Hose couplings, nipples, reducers and caps—Test cocks—Brass pipe plugs—Sight feed Y fittings—Cast brass return bends—Brass pipe return bends—Combination outlet ell and racking cock—Combination outlet ell and lock cock—Spring racking valve—Spring valve opener—

Our new Catalog is Now
ready for distribution

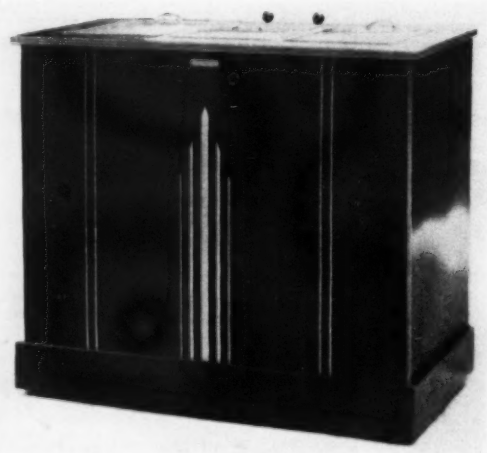
RUNDLE-SPENCE MFG. CO.
445 North 4th St. MILWAUKEE, WIS.
Sixty Years of Brass Manufacturing Experience

Products
for the
Beer and Bar Equipment Dealer

Readers will find in this section information and news regarding products for use in making their beer dispensing sales and installations

A Bar Finishing Material

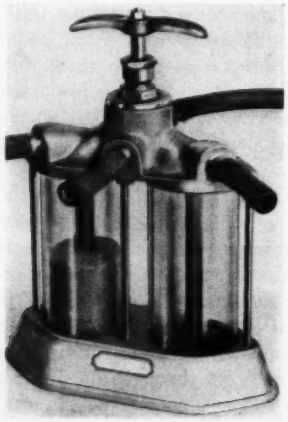
They've "lifted" the face of the modern bar. There are, of course, the usual dignified mahogany and walnut bars—but this new day demand for something brighter, livelier, has resulted in the use of "Formica" as a finish for bars. It has a high gloss and, with metal trim offering infinite possibilities for decorative treatment, it



strikes the modern note in acceptable fashion. Not only can it be used for bar finishes, but also for wall decoration, for wainscoting, for table tops, trays, etc. It comes in convenient sizes for handling. It may be had in a variety of colors with metal trim for cover strips, cap mold and inside and outside corners. Strips may be had in color, also. It's made by The Formica Insulation Company, located at Cincinnati, Ohio.

For Clean Coils

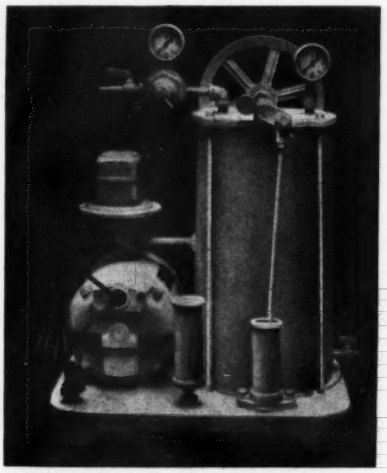
Manufacturers are determined that there shall be no reason for coils that are not clean. The cleaner shown uses a special sand for scouring the coils. The barrels are disconnected and a complete circuit made by detaching couplings from tap rods and connecting the hose or pipes. The cleaner is placed on the bar with the three hoses facing the taps. Hoses are connected to taps and the center hose is connected to water faucet. When water faucet is opened and sand released, the sand is sent through the coils and into the empty glass. The valve on the top of the cleaner is then reversed and the sand travels through the coils in the opposite direction. Sales points as developed by the manufacturer: "Three most important items in the handling of beer by the retailer are: sanitation, refrigeration and carbonation. Sanitation: A sedimentary residue is latent in all beer.



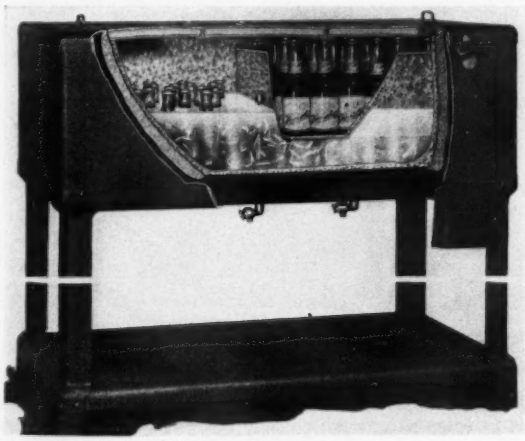
This comes from the hops and malt and other solids used in its manufacture. Small portions of this sediment attach themselves to every object with which they come in contact." This sediment must, of course, be removed from the coils frequently—hence the demand for the beer coil cleaner that will do a good job. This item is made by The Dobbleid Manufacturing Co., 407 S. Fourth St., Minneapolis, Minn.

An Oilless Beer Pump

It weighs 60 lbs., is 17 in. long, 14 in. wide and 17 in. high, making it possible to install it in a convenient space which might otherwise be unused. The makers indicate that it was designed specifically for beer service. It

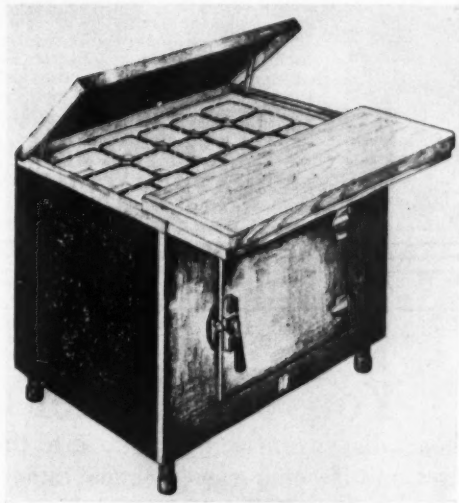


comes complete with air intake filter, automatic pressure regulated electric meter control, air pressure regulator and gauges, brass cylinder, flywheel, drive belt, electric motor and pulley, mounted on a cast iron base, with large capacity air storage tank equipped with drain cock, electric cable with attachment plug and air connecting hose. It's finished in gray enamel. It has a capacity of eight full 31-gallon barrels. Dealers may say, in the makers' own words: "The entire equipment is composed of essentials for the exact purpose." It is made by Dwight Dunning Co., Lawrence and Vine Sts., Philadelphia, Pa.



Beverages at Two Temperatures

The manufacturer of the coil cleaner above listed refrigeration as one of the three prime requirements in the handling of beer. But the manufacturer of the cooler shown above has met the double problem of refrigeration produced by the fact that taverns and other establishments will be selling bottled beer along with carbonated beverages. Beer below 40 degrees is too cold; soft drinks above 36 degrees are too warm. Feeling that something had to be done about this, the above cooler was developed, giving two controlled temperatures. With it, the same charge of ice, or the one cooling coil in mechanical refrigeration, is made to produce the two desired temperatures. There is a dry compartment for beer if desired, or cooling may be accelerated by a varying submersion of the bottles. In the larger models, the need which small dealers may have for a dry cooling compartment for other items than beverages, is met. The manufacturer calls this process "duplexed refrigeration." Glascock Bros. Mfg. Co., of Muncie, Ind., manufacture the cooler.



For Making Sandwiches

Food and beer are closely related, not only in a quite natural alliance, but under the laws of a number of cities and states the beer may not be served without food. In such communities, food service equipment must be installed along with beer dispensing equipment. The drawing which is reproduced shows a sandwich unit, 24 in. deep when closed, 34 in. wide and 32 in. high over the cutting board. The top is designed to accommodate 16 standard refrigerator dishes of two sizes, 6x5 in. and 9x5 in. The cutting board is of laminated maple and forms a cover for the front half of the top, while the rear portion is protected by a regular hinged cover of stainless steel which may be opened to any desired height. The body of the unit is arranged for food storage, and may be refrigerated mechanically, or with ice. It is of all-steel construction, front and top faced with stainless steel, and is said to be thoroughly insulated. It is lined with tinned copper. The unit is described as being particularly adapted for use with bars in making sandwiches,

CURTIS
Beer Equipment

Outstanding
QUALITY
Makes It Easy to Sell

CURTIS Beer Pumps

Compact (vertical or horizontal tanks). Precision made. Reflect our 40 years experience in building air compressors. Air strainer on intake, quiet, rubber mounted, V-belt drive, wick-oiling. Uses Po-Ri-Co for lubrication, won't contaminate beer, cost of pumping much lower than with gas. Adaptable to stationary or portable bars—1/6 or 1/4 H. P. sizes. Attractively priced. Details on request.

Refrigerating Units

Design and precision tooling combine to make these units extraordinary from the standpoint of efficiency; and amply able to withstand the exacting requirements of long continued intermittent service. Buyers who seek good equipment will be interested in these units. Details on request.

CURTIS
PNEUMATIC MACHINERY CO.
1934 Kienlen Avenue, Saint Louis
5518-Y Hudson Terminal, New York City

You, the Dealer in beer dispensing equipment, are the last, and in some ways the most important, link in the chain of distribution.

You are required to know all about dispensing equipment, how to install it, how to service it, how to instruct others in its use.

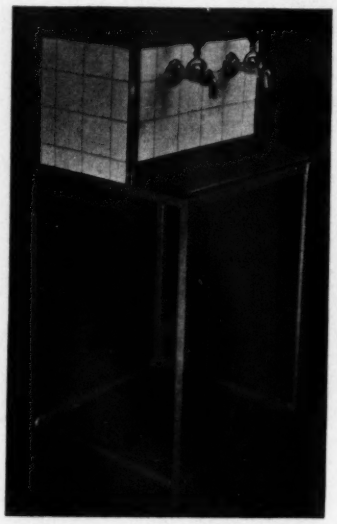
There's repeat business if you are prepared at all times to do a good job as a dealer—and you can be so prepared if you are a regular reader of

BEER *and* BAR EQUIPMENT SECTION

which carries full information on selling, installing and servicing beer dispensing equipment. It appears in every issue of

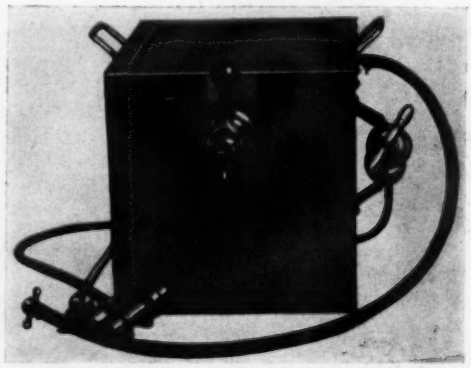
DOMESTIC ENGINEERING

etc., because of its narrow depth which conforms to that of standard bars. The cutting board slides out to permit access to the refrigerator dishes beneath it, ten of these dishes being at all times exposed. The ice pan immediately beneath the dishes serves as an ice bunker or as a baffle for a mechanical coil. It is of tinned copper. The manufacturer is Equipment Sales Company, Juniper & Cherry Sts., Philadelphia, Pa.



A Small Dispenser

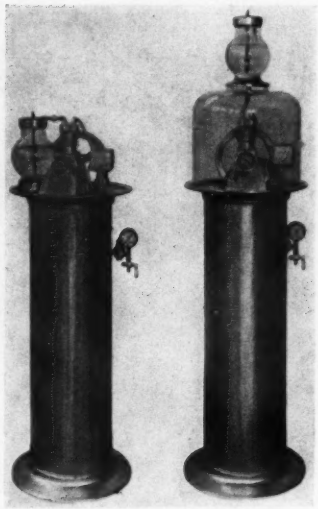
Equipment makers are taking care of the non-commercial demand for beer dispensing equipment—the demand created by the once-a-month meeting of the lodge, or the party at home at which beer is to be served. The small dispensing unit shown is suggested to the equipment dealer as one which may be rented for such affairs. It includes the bar drainer top, a chrome faucet, coil, peerless tap, 28 in. rod, beer and air hose and air pump. It is also furnished with the faucet and coil only, at a lower cost. With this little unit, the party may be served conveniently and, no doubt, the equipment dealer can find a number of such affairs where the dispenser can



be rented out for an evening, or a day. The two-faucet dispenser may be had of stainless steel or tile finish. It's insulated, has chrome faucets, and comes complete "except keg of beer and gas drum." The manufacturer is Hohler Furnace & Sheet Metal Co., Water and Decanter Sts., Sandusky, Ohio.

Washed Air Beer Pump

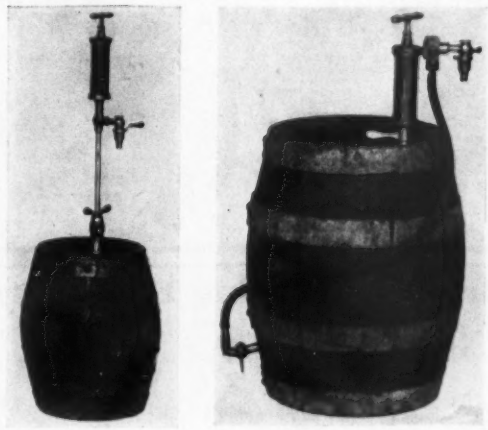
The beer pump shown is electrically driven. Mounted on a 25-gallon capacity tank; glass enclosed, the pump has two large cylinders, herringbone gear drive, is ball-bearing and self-oiling. Features are the air filter, through which air is drawn by suction through water



filter, one place for oiling, all working parts contained in gear case and self-oiling device. Sales points as underscored by the manufacturer are: The pump is ornamental and can be placed at end of bar; sanitary; economical; and guaranteed for ten years in the company's literature. The tank is finished in silver, with green base and top, chromium plated. New model sold with air filter only, but with choice of glass dome. Made by Badger Electric Beer Pump Co., 1226 No. 29th St., Milwaukee, Wis.

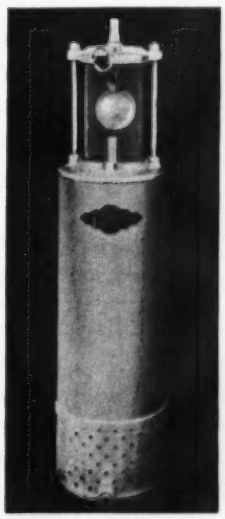
A Picnic or Club Pump

Another manufacturer offers the equipment which is illustrated. It may be furnished as desired—pump only, faucet outlet, or combination pump and outlet. The pump is of the piston ring type with heavy brass cylinders. Pumps are equipped with either single or double tap rods, all easily detachable. This equipment is for the summer picnickers that dot the country in large numbers throughout the season. Trade and social groups have their outings, and with the return of beer the use of such equipment has become essential. The small club, too, will find it useful, for its occasional gatherings throughout the year. The makers say that the new taprod attachment is a special heavy brass one-piece hexagon and furnishes a shoulder for the outer tube so that no matter how handled, the soldered joint is always protected. The pump is made by Marvel Tap Company, 2365 Grant Blvd., Milwaukee, Wis.



A Dispensing System

Efforts are maintained all along the line to assure the ultimate consumer a beer that has all of its distinctive flavor, at the right temperature. The illustration shows "The Kirstal-Vac" system. This unit embodies filtering, elimination of wasted beer, cooling, and an empty keg signal system. The beer is first passed into the glass



trap mounted on top of the tank, which has a capacity of two and one-half gallons. This trap filters the beer. From the glass cylinder trap, the beer settles into the cooling tank by means of a baffle, which prevents the warm beer from rushing in and mixing with the beer that has already been cooled. The beer for serving is drawn from the bottom of the tank. The signal which

Positively Pumps No Oil!

Dayton's "WHITE CAP" Automatic, Oil-less BEER PUMP

EXCLUSIVELY FOR BEER!

Ideal for dispensing draught beer in large volume—because it assures a good supply of clean, dry compressed air at all times. No pistons or rings—prevents pumping of any oil whatsoever into air line. ¼ HP repulsion-induction motor—10 gal. tank—cuts out at 30 lbs. pressure and in at 20 lbs.—quiet operation—V-belt driven. Size 24"x25"x 12". Weight—80 lbs. net. Ask about Model Y-100—Also Air Compressors from 1 to 50 cfm.

The DAYTON AIR COMPRESSOR CO.
"49 Years of Specializing"
425 Valley St., Dayton, Ohio

Beer Dispensing Equipment
for
26 Years!

Bar Faucets. Tapping Rods, Beer Dispensing Equipment and Fittings; Coils, Air and Gas Regulators and pumps.

ILLINOIS BRASS MFG. CO.
224 NORTH ADA STREET CHICAGO, ILL.

WACO

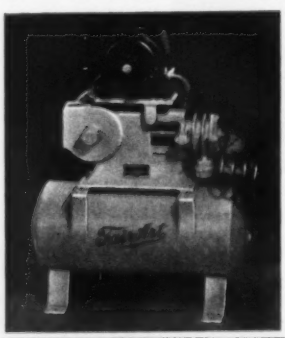
AUTOMATIC ◆ COMPACT

Most Popular Beer Pump in America

Write for details and territory offerings

WATER APPLIANCE CO.
605 N. SECOND ST., MILWAUKEE, WIS.

ECONOMICAL ◆ OIL FREE



.No Oil
.No Oil Fumes
.Just Fresh Beer

The FAIR-ART is constructed so that oil or oil fumes can not get even remotely close to the beer. Air compressor cylinder and crank case housing are separated, eliminating need for lubrication.

Profitable territories are still available. Write at once.

The **FAIR-ART**

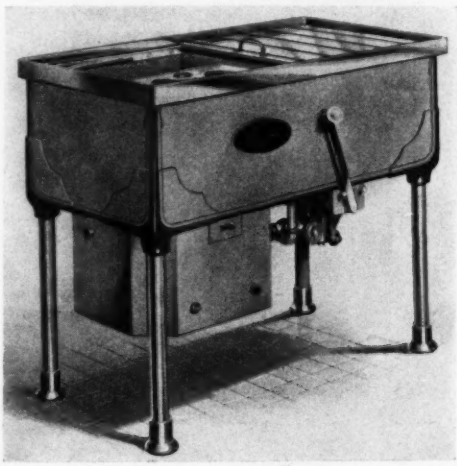
Shipped completely assembled. Two sizes: No. 800—10 tap capacity. No. T-800—20 tap capacity.

FAIRBANKS ENGINEERING CO.
WORCESTER, MASSACHUSETTS

shows that the keg is empty operates while there is a reserve of beer, equal to the volume in the tank. This system, the makers say, insures beer with a uniform head, even temperature and the natural taste. The glass cylinder trap in which the filtering is done can be easily removed and cleaned. The system is manufactured by Kristal Engineering Company, 30 Nicholson St., Newark, N. J.

For Sparkling Glassware

An array of glasses, sparkling back of bar or counter, is an inviting sight. No one ever enjoyed drinking from dull glassware—to say nothing of the effect upon beer



when glasses are not perfectly cleaned. The model of glass-washer shown is a motor-driven, spray type. It may be built into a drain board, sink compartment or work table. A pump, designed for the purpose, shoots water up through nozzles in a revolving wash arm. Glasses to a considerable number are racked in the washer. The water is deflected by the hood and is driven over the glasses again and again. A turn of the handle and steam-hot water rinses the glasses. The company also makes several models of the motor-driven brush type washer, with which glasses are pressed over the revolving brushes and cleaned inside and out. The Hobart Manufacturing Company, Troy, Ohio, is the manufacturer of this equipment.

Announces Improvement in Block Tin Pipe

The engineering department of the White Metal Rolling & Stamping Corporation, 80 Moultrie Street, Brooklyn, N. Y., is distributing an announcement of its efforts to make a beer and soda fountain pipe that will withstand breaking and bursting conditions, the result of its efforts being that it has developed a tin pipe of such construction that every inch of its walls is in absolute uniformity and precision. The announcement states that this new pipe has been tested to more than thrice the amount of pressure used in soda fountain and beer installations.

For Special Fittings write the GRAND HAVEN BRASS FOUNDRY

BRASS BAR RAILS AND FITTINGS

No. 2365 No. 2366 No. 2367 No. 2368

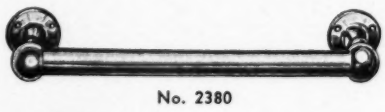
No. 2360

No. 2325

OVERFLOW AND STANDPIPE WITH COUPLINGS

Brass Plug can be furnished if desired

No.
2325—With 8" Standpipe.
2326—With 10" Standpipe.
2327—With 14" Standpipe.
2328—With 20" Standpipe.
2329—Brass Plug Only.



No. 2380

No. 2370

No. 2369

No. 2305

SOCKETS AND TAIL PIECES

No. 2332

No. 2335

No. 2336

No. 2332—1x2" Socket and lock nut only.
No. 2333—1x3" Socket and lock nut only.
No. 2334—1x4" Socket and lock nut only.

HINGES, CATCHES AND PULLS

No. 2371

No. 2373

No. 2375

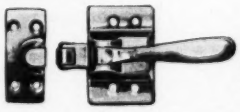
No. 2378

No. 2337

SOLDERING FLANGES

No. 2337—For ⅛" Pipe.
No. 2338—For ¼" Pipe.
No. 2339—For ⅜" Pipe.
No. 2340—For ½" Pipe.
No. 2341—For ¾" Pipe.
No. 2342—For 1" Pipe.

(Larger sizes furnished if desired)



3 4

No. 2420

No. 2347

No. 2348

No. 2349

No. 2350

No. 2352

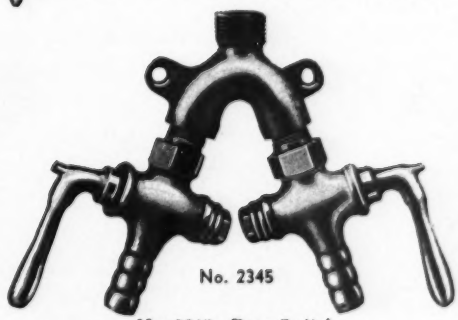
No. 2346

No. 2351

No. 2346—Y Distributor

No. 2402

No. 2222



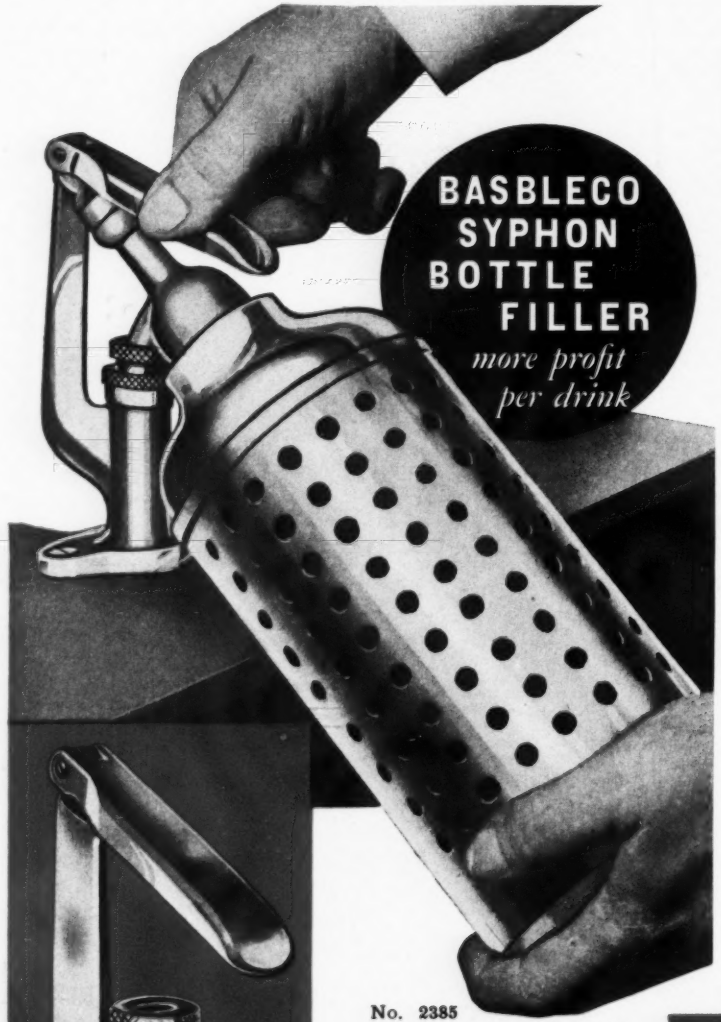
No. 2345

No. 2345—Beer Switch

Grand Haven Brass Foundry, Grand Haven, Mich.

A NEW RAPID SELLER

PROFIT for You and Your Customer



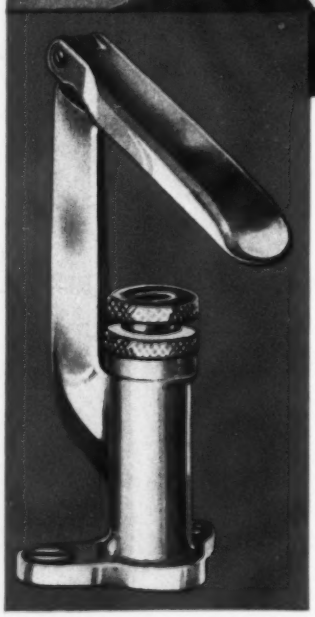
Show your customer definite extra profits. Show him how to serve better drinks for less money. A seltzer drink is better than a drink mixed with soda or ginger ale, and costs much less to make, with the Basbleco Syphon Bottle Filler. Syphon bottles can be filled at less than 1c each when carbonic gas costs 20c per pound.

The bartender fills his own bottles at odd times. Speedier, cheaper, more convenient bar service. The equipment pays for itself. When carbonic gas is used for serving beer, the same gas tank can be used for making seltzer by using both high and low pressure CO_2 regulators, attached to the tank by a No. 2390 double connection.

If draft beer is served at bar, a No. 2327 cooler is located in beer coil box. Otherwise, a cooler box is necessary. If city water is cloudy or unfit, a water filter may be used.

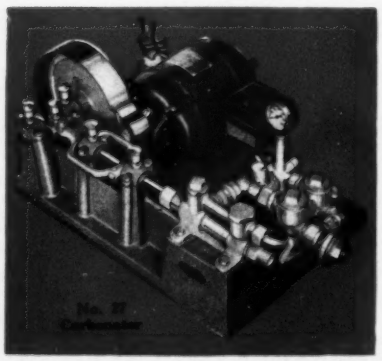
The No. 27 carbonator, recommended for this service, produces a super-carbonated water without attaining the usual high commercial filling pressures. It pumps measured amounts of gas and water through the No. 2327 coolers, at which point complete saturation is accomplished at low temperatures. Operated from a lighting circuit. In ordering, specify alternating or direct current, and voltage.

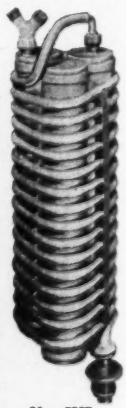
THE BASTIAN-BLESSING COMPANY
240 E. Ontario St., Chicago



No. 2385 outfit comes complete, including bottle guard, and filler guard as shown, together with No. 2-95 shut-off valve and connection for ¼", 4-ounce block tin pipe. Shank of filler valve is standard for ⅞" drain-board thickness.

We also manufacture Bar Fixtures, Carbonators, Soda Fountains, Coffee Urns, Ice Cream Freezers





No. 2327

BASTIAN-BLESSING

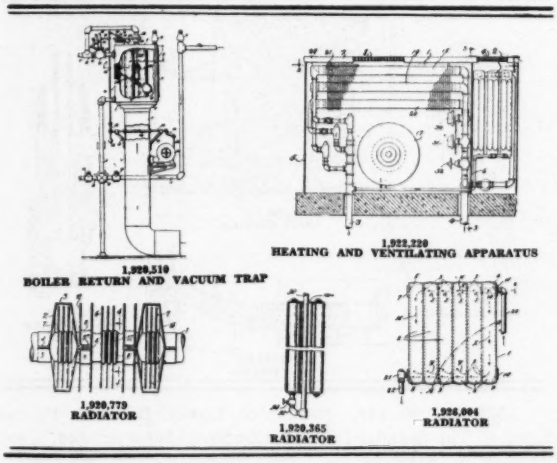
Manufacturers of approved dispensing equipment for nearly half a century.

New Ideas From Patent Office

Heating Department

1,920,510. Boiler Return and Vacuum Trap. Stanley F. Knefel, Raymond Knefel, Clement Knefel, and Emmanuel Knefel, St. Louis, Mo.

1,922,220. Heating and Ventilating Apparatus. Douglas Sprague, deceased, late of Mount Vernon, N. Y., by Etta Grant Sprague, administratrix, Mount Vernon, N. Y.



1,920,779. Radiator. Irving T. Bennett and Frank C. Reynolds, Brooklyn, N. Y., assignors, by mesne assignments, to American Radiator & Standard Sanitary Corporation, a corporation of Delaware.

1,920,365. Radiator. Harry Del Mar, New York, N. Y.

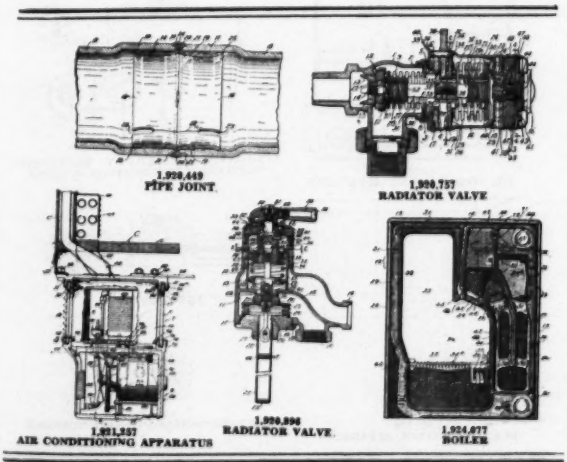
1,926,004. Radiator. Elbert O. Haskins, Rutherford, and Thurlow W. Reynolds, Woodridge, N. J., assignors to American Radiator Company, New York, N. Y., a corporation of New Jersey.

1,920,449. Pipe Joint. Herman A. Unke, Cleveland, Ohio.

1,920,757. Radiator Valve. William B. Mackintosh, Wabash, Ind., assignor to Minneapolis-Honeywell Regulator Company, Minneapolis, Minn., a corporation of Delaware.

1,921,257. Air Conditioning Apparatus. Lee W. Melcher, Winnetka, Ill.

1,920,896. Radiator Valve. Paul F. Shivers, Wabash, Ind., assignor to Minneapolis-Honeywell Regulator Company, Minneapolis, Minn., a corporation of Delaware.



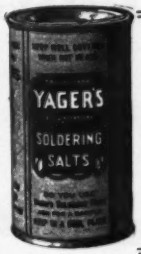
NO-SOL *Copper Floats*

Standard equipment in most toilet tanks built in this country for more than twenty-five years.

4" x 5" Oval Float

THE AYLING & REICHERT CO.
3047 NORTH ERIE STREET TOLEDO, OHIO

SOLDERING SALTS
for all lead work



It's easy to do good work with Yager's. It has been especially developed for all lead work. Ask for it by name and beware of substitutes.

ALEX R. BENSON CO., Inc.
Hudson, N. Y.
Sales Agency for Canada:
CANADIAN GENERAL ELECTRIC CO.
Toronto and Montreal

REMEMBER THE NAME
YAGER'S

• WARNOCK •
Triple Wear Wrenches

The Warnock wrench is easy to adjust. The strap is arranged in such a way that it can be drawn absolutely tight in *one* movement. Notice, too, that this strap is triple folded at the point of greatest strain.

For chrome, brass and nickel plated pipe

WARNOCK MFG. CO., Worcester, Mass.

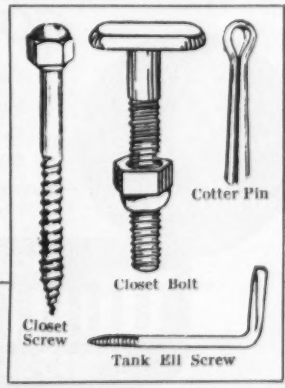
ORDER your plumbers' specialties for 1934 NOW.

Have them constantly on hand so that when government building and remodeling and replacement work gets under way they will be where you want them.

We can take care of you immediately. See our line in the Domestic Engineering Plumbing and Heating Catalog.

HINDLEY MFG. CO.
VALLEY FALLS, R. I.

HINDLEY'S PLUMBERS' SPECIALTIES



3 GENERATIONS OF MANUFACTURING EXPERIENCE . . . PROTECT YOU - WHEN YOU

NATIONALLY DISTRIBUTED thru McDonald Co. THRU REGULAR TRADE CHANNELS only A COMPLETE LINE SENSIBLY PRICED

Select McDONALD PLUMBING BRONZE

A. Y. McDONALD MFG. CO., Dubuque, Iowa

OMAHA • MINNEAPOLIS • DES MOINES • KANSAS CITY • SIOUX CITY

Look for the Arm-and-Hammer

ARMSTRONG BROS.

SOLID DIES and STOCKS

Cut SMOOTH threads; cut faster, easier. Chasers of Vanadium Tool Steel with backed-off teeth that eliminate "drag." Correct Cutting-Angle. Correct Throat Angle. Ample Chip Clearance. Stocks have no sharp corners or ridges; are light, strong, balanced, handy, accurately machined. Take all makes of dies.

Singly or in Sets

Write for Catalog

ARMSTRONG BROS. TOOL CO.
"The Tool Holder People"
323 N. Francisco Avenue CHICAGO, U. S. A.

DART

IN UNIONS THERE IS STRENGTH!

Because the two ball-ground, wide-bearing seats are not only swedged into tough malleable pipe ends, but they are made of bronze, thus protecting both sides of the joint from corrosion. Try DARTS and settle your union problem for once and for all.

E. M. DART MFG. CO., Providence, R. I.
The Fairbanks Company, Sales Agents
Canadian Factory, Dart Union Company, Ltd., Toronto, Canada

GOOD NEWS!

$3.00 and $3.50 with bath

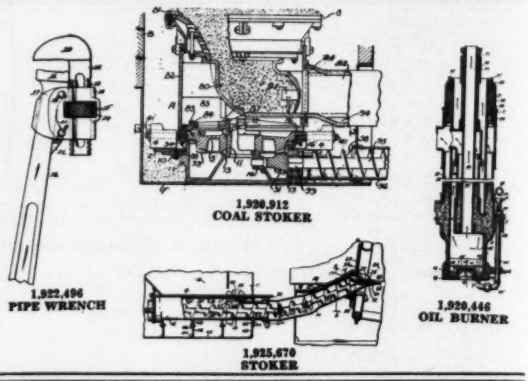
Room rates have been reduced at Pittsburgh's finest hotel. • Nearly half the 1600 rooms are now $3 and $3.50. • It's a NEW DEAL! Every room with bath. •

HOTEL WILLIAM PENN PITTSBURGH

1,924,077. Boiler. Charles W. Brabbée, Bronxville, N. Y., assignor to American Radiator Company, New York, N. Y., a corporation of New Jersey.

1,920,912. Coal Stoker. Adolph Ousdahl, Seattle, Wash., assignor, by mesne assignments, to Henry M. Brooks, New York, N. Y., William Tudor Gardiner, Augusta, Maine, and Richard Kingsley Hawes, Fall River, Mass., as trustees.

1,922,496. Pipe Wrench. Louis E. Peck, Greenfield, Mass., assignor to Mechanics' Tool & Wrench Company, Greenfield, Mass., a corporation of Massachusetts.



1,925,670. Stoker. Nathan M. Lower, Bellevue, Pa., assignor to The Standard Stoker Company, Incorporated, a corporation of Delaware.

1,920,446. Oil Burner. William Tryon, Lima, Peru.

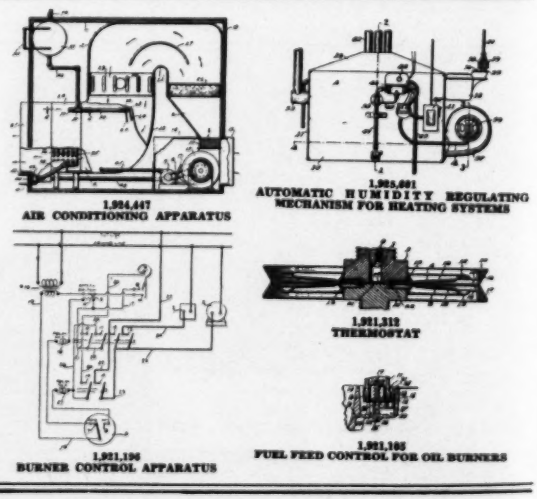
1,924,447. Air Conditioning Apparatus. Leo L. Landauer, Dallas, Tex.

1,925,601. Automatic Humidity Regulating Mechanism for Heating Systems. Frederic D. Pfening, Columbus, Ohio, assignor to The Fred D. Pfening Company, Columbus, Ohio, a corporation of Ohio.

1,921,312. Thermostat. William Eichholz, Cicero, and Richard W. Leutwiler, Chicago, Ill., assignors to Illinois Engineering Company, Chicago, Ill., a corporation of Illinois.

1,921,196. Burner Control Apparatus. John P. Kriechbaum, Minneapolis, Minn., assignor to Minneapolis-Honeywell Regulator Company, Minneapolis, Minn., a corporation of Delaware.

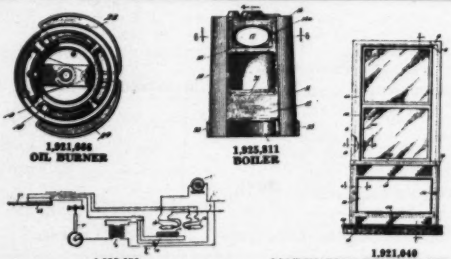
1,921,105. Fuel Feed Control for Oil Burners. Leolyn F. Spear, Westfield, Mass., assignor to Gilbert & Barker Manu-



facturing Company, West Springfield, Mass., a corporation of Massachusetts.

1,921,666. Oil Burner. Antonio Fransosi, Providence, R. I.

1,925,811. Boiler. André M. Mertzanoff, Paris, France, assignor to American Radiator Company, New York, N. Y., a corporation of New Jersey.



1,921,666 OIL BURNER

1,925,811 BOILER

1,923,651 CONTROL MECHANISM FOR ELECTRICALLY OPERATED LIQUID FUEL BURNERS

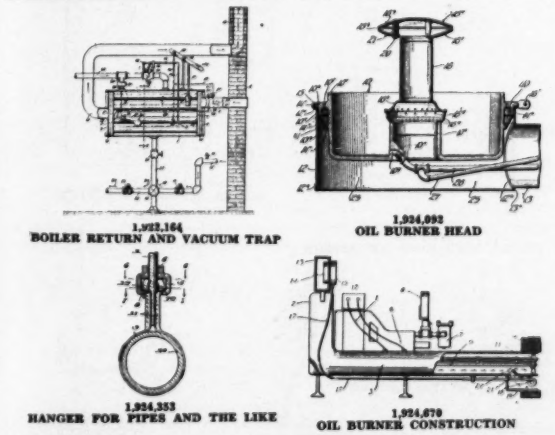
1,921,040 COMBINATION WINDOW AND RADIATOR INCLOSURE

1,923,651. Control Mechanism for Electrically Operated Liquid Fuel Burners. Walter W. Williams, Bloomington, Ill., assignor to Williams Oil-O-Matic Heating Corporation, Bloomington, Ill., a corporation of Illinois.

1,921,040. Combination Window and Radiator Inclosure. Frank C. Reynolds, New York, N. Y., assignor, by mesne assignments, to American Radiator and Standard Sanitary Corporation, a corporation of Delaware.

1,922,164. Boiler Return and Vacuum Trap. Stanley C. Knefel, St. Louis, Mo.

1,924,092. Oil Burner Head. Augustus J. Frame, Columbus, Ohio, assignor to Franklin Oil Heating, Inc., Columbus, Ohio, a corporation of Ohio.



1,922,164 BOILER RETURN AND VACUUM TRAP

1,924,092 OIL BURNER HEAD

1,924,353 HANGER FOR PIPES AND THE LIKE

1,924,670 OIL BURNER CONSTRUCTION

1,924,353. Hanger for Pipes and the Like. Ray Fitzpatrick, East Palestine, Ohio.

1,924,670. Oil Burner Construction. Walter W. Williams, Bloomington, and Ira E. McCabe, Chicago, Ill.

1,925,812. Domestic Air Conditioning. Ernest B. Miller, Baltimore, Md., assignor to The Silica Gel Corporation, Baltimore, Md., a corporation of Maryland.

18,934. Humidifying Device. Edward C. Rosenow, Rochester, Minn.

1,925,822. Method of Heating and Ventilating. Wilfred Shurtleff, Moline, Ill., assignor to The Herman Nelson Corporation, Moline, Ill., a corporation of Illinois.

THE "MODERN" RANGE BOILER

Pat. No. 1853949

30, 40 and 50 Gallons
200, 250 and 300 lb. Test

In the above capacities the top and body of the "Modern" Boiler is formed from a single extra-heavy Copper Shell and drawn cold-seamless to the bottom, thus eliminating the top joint and the side seam and leaving only a bottom joint. The bottom head is hydraulically pressed on the shell and riveted securely with Copper Rivets closely spaced. Over the rivets a seamless copper band is spun and sweated, reinforcing the joint and making a solid construction which is impossible to come apart under any circumstance. Every boiler is reinforced internally and guaranteed against collapse. The interior is thoroughly tinned.

Sold Through Wholesalers Only

HAYES MFG. CO., Paterson, N. J.

Established 1870

ACHESON FITTINGS

1. **Air Tested Under Water:** Guarantees a non-leak fitting.
2. **Made of Red Brass:** Guarantees long life and resistance to corrosion.
3. **Quality Workmanship:** Guarantees perfect tapping, clean cut threads properly tapered and with adequate countersinks.

WRITE FOR CATALOG

Acheson Manufacturing Co.

Factory and Office: Rankin, Pa.
Warehouse: 197 Lafayette St., New York City

ACME HANDIPAK

• BEVELED BIBB WASHERS •

A Washer for every purpose

The ACME is made of an exceptionally tough black rubber compound. Resists extremely hot or cold water. Overcomes rapping or chattering of faucets. Allows full waterway. Makes perfect seat. Comes in seven sizes.

Your jobber carries them.

LAVELLE RUBBER COMPANY
320 WEST ILLINOIS ST., CHICAGO, ILL.

BARRETT

PLUMBER'S *Rough* BRASS *Goods*

The Standard — *Compression Stops* — *Compression Stops and Wastes* — *Ground Key Line* — *Waterworks Brass Goods* — *of Comparison*

THE CLEVELAND BRASS MANUFACTURING COMPANY
4600-4700 HAMILTON AVENUE CLEVELAND, OHIO

YESTERDAY AND TOMORROW

Under One Roof

The elegance of yesterday and the modernity of tomorrow are yours at the famous Auditorium Hotel — completely modernized at a cost of over $100,000.

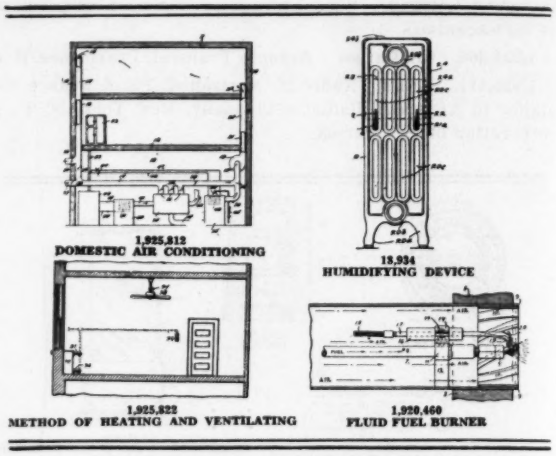
All the distinctive characteristics of superlative living, the high standards of service, the inimitable food and the distinguished Michigan Avenue location are offered you today in a new dress at a daily rate from $1.50 single without bath—from $3 single with bath—double from $5.

Write for illustrated folder

ARTHUR J. NEWMAN · · · · · MANAGER

AUDITORIUM HOTEL

CHICAGO

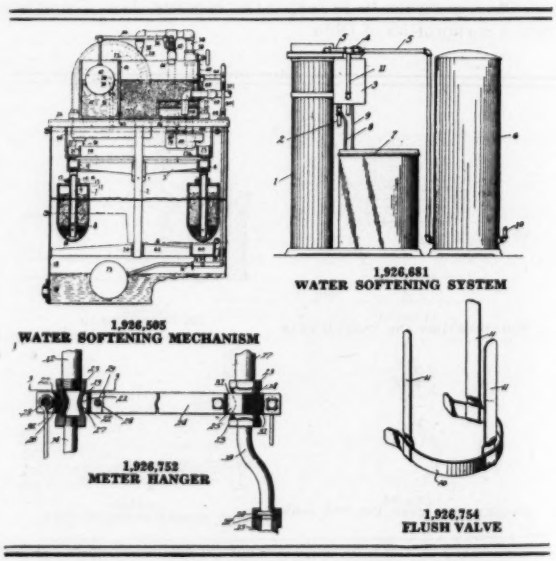


1,920,460. Fluid Fuel Burner, Robert F. Bruns, Sarpy County, Nebr.

Plumbing Department

1,926,505. Water Softening Mechanism. Edward T. Turner, Dayton, Ohio, assignor to General Water Treatment Corporation, New York, N. Y., a corporation of Delaware.

1,926,681. Water Softening System. Frank X. Lauterbur and Edward J. Lauterbur, both of Sidney, Ohio.



1,926,752. Meter Hanger. Robt. H. Mueller, Decatur, Ill., and Arion V. Cushman, Washington, D. C., assignors to Mueller Co., Decatur, Ill., a corporation of Illinois.

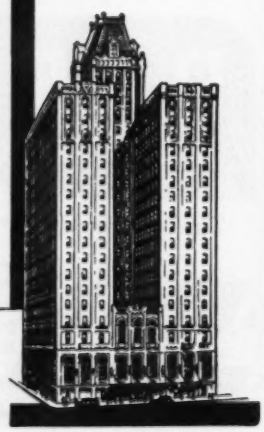
1,926,754. Flush Valve. Lee B. Roberts, Corbin City, N. J., assignor of one-half to Richard H. Coney, Miramar, and one-fourth to Katherine Roberts, and one-fourth to Thresta Roberts, both of Corbin City, N. J.

Portland, Ore.—R. Bontly has purchased the plumbing and heating business of R. F. Long & Son, at the northeast corner of Thirty-third Street and Broadway.

finest BANQUET *and* CONVENTION FACILITIES *in the* SOUTHEAST

LORD BALTIMORE HOTEL

- 2000 capacity convention hall equipped with fine amplifying system...
- 10 parlors with a capacity of 20 to 150 people each for private dinners or meetings
- Dining room and coffee shop facilities to serve 5000 people daily.....
- Largest and most modern hotel in Baltimore. Radio in every room.....
- Richest historical points of American history within a 200 mile range .....
- 700 rooms with bath and radio - $3. up...



WALTER L. JACKSON · *MNG. DIRECTOR*

BALTIMORE MARYLAND

8 cents for each word including heading and address. Count seven words for keyed address. Minimum $2.00 for each insertion.

CLASSIFIED ADVERTISING

One inch $4.00. Cash must accompany order. Copy should reach us eight days in advance of publication date.

Situations Open

SALESMAN FOR WESTERN PENNsylvania and New York state, with the exception of the metropolitan area of New York City, by an independent manufacturer of enameled iron plumbing fixtures. Salesman who is established in territory with other non-conflicting lines is preferred. Give selling record and references in first letter. Address Key 931, "Domestic Engineering," 1900 Prairie Ave., Chicago, Ill.

SALESMAN WANTED TO SELL NEW patented adjustable tank cover. This item has both jobber and consumer appeal. Write to Pioneer Mfg. Co., 6 Park St., Boston, Mass.

MANUFACTURER WANTS FEW more salesmen or distributors calling on hardware plumbing trade, wholesale or retail. Few territories open. Good side line going big. Every woman wants one. Should make $6.00 a day. Dept. 2, 890 St. James Ave., Springfield, Mass.

AN OLD ESTABLISHED INDEPENDent manufacturer of enameled iron plumbing fixtures wants a salesman with a few allied lines to sell wholesalers in Tennessee, Kentucky, Mississippi and Alabama. Replies should be restricted to those with a successful selling record. References required. Address Key 932, "Domestic Engineering," 1900 Prairie Ave., Chicago, Ill.

Position Wanted

EXECUTIVE DESIRES POSITION. Twenty years' experience including stockroom, billing, traveling salesman, credits, sales manager, general manager, plumbing, heating, mill supplies. Best reference. Compensation open. Address Key 939, "Domestic Engineering," 1900 Prairie Ave., Chicago, Ill.

Representatives Wanted

Representative Wanted

We want a man of high calibre to represent us in the sale of Herman Nelson heating and ventilating equipment. He must have the knowledge and experience necessary to contact architects, engineers, jobbers and contractors. Satisfactory salary, expenses and opportunities go with this position. If you are competent and desire such a position, send complete information regarding qualifications.

The Herman Nelson Corporation
MOLINE, ILLINOIS

DIRECT FACTORY REPRESENTAtion by a manufacturer of Plumbers' Brass Goods. Commission basis. State lines represented. Give qualifications. Address Key 935 "Domestic Engineering," 1900 Prairie Ave., Chicago.

REPRESENTATIVES, JOBBERS OF food service equipment. Unusual opportunity to present line of soda fountains and beer equipment for organization that has maintained leadership in quality field for half century. Write qualifications. The Fischman Co., Tenth & Allegheny, Philadelphia, Pa.

REPRESENTATIVE WANTED: A well-known manufacturer is ready to market a combination sink faucet of an entirely new type, with the highest quality and at a competitive price. Patented. To be sold to jobbers. Territory open. Address Key 936, "Domestic Engineering," 1900 Prairie Ave., Chicago, Ill.

THE STATES OF NORTH AND South Carolina, Georgia and Florida are open for sales representation by a salesman now having a few other kindred lines. The product is enameled iron plumbing fixtures manufactured by a soundly financed independent company. Write fully with references to Key 930, "Domestic Engineering," 1900 Prairie Ave., Chicago, Ill.

SALES REPRESENTATIVES wanted: Men now contacting the plumbing and heating trade to handle complete line of range oil burners and several models of domestic hot water units. Other items in season. Attractive proposition. Reputable 20 year old organization. Fine profit possibilities and exclusive territories. Describe territories covered, type of trade, and lines carried. Monitor Utilities Corp., 43-00 Crescent St., Long Island City, N. Y.

MANUFACTURERS' AGENTS wanted to take on nationally-known, complete line of low pressure steel heating boilers. Territories available in all parts of the United States. Commission basis. An attractive opportunity for those who can qualify. Write giving qualifications. Address Key 934, "Domestic Engineering," 1900 Prairie Ave., Chicago, Ill.

Lines Wanted

MANUFACTURERS' REPRESENTAtive, established trade in Maryland, District of Columbia and Virginia, desires line of closet seats and pottery. Address Key 937, "Domestic Engineering," 1900 Prairie Ave., Chicago, Ill.

EXCLUSIVE DISTRIBUTORSHIP wanted. For equipment designed for the air conditioning, low pressure heating field, or humidification work. Territory New England. Old established concern selling only to heating and plumbing trade. Widger Miller Corp., 99 State St., Boston, Mass.

For Sale

FOR SALE: PLUMBING AND HEATing business with the following agencies: Maytag Washer, Electrolux Gas Refrigerator, Magic Chef Gas Range. Good business, Virginia. Address Key 941, "Domestic Engineering," 1900 Prairie Ave., Chicago, Ill.

Miscellaneous

NRA CODES REQUIRE ACCURATE records of costs. We have printed forms, easy to use and economical to buy. Samples mailed same day we receive request. L. Fink & Sons, Printing for Plumbers, School Building, Laurel Springs, New Jersey.

WANT TO BUY AN ESTABLISHED plumbing and heating business in Wisconsin, or Wisconsin-Illinois line. Address Key 938, "Domestic Engineering," 1900 Prairie Ave., Chicago, Ill.

WE ARE LOOKING FOR A SPEcialty which we can make and market. We have a large plant and necessary financial backing to do such a job on an elaborate scale. Our past success assures a profitable future. Write giving necessary information. Address Key 940, "Domestic Engineering," 1900 Prairie Ave., Chicago, Ill.

We Pay Cash

For Surplus

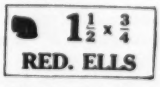
Pipe Couplings
Thread Protectors

Turn dead stock into quick cash by shipping your surplus couplings and thread protectors to us. Write for our highest market prices —Today.

Mid-Valley Steel Co.
2700 S. First St. St. Louis, Mo.

MANUFACTURERS OF PLUMBERS brass goods is interested in securing good inventions, royalty or buy outright. Address Key 922, "Domestic Engineering," 1900 Prairie Ave., Chicago, Ill.

PLUMBERS' BIN LABELS



Send for free booklets for plumbers: "How to Label Plumbers Stock Bins"; "Training the Store Room Apprentice to Know His Goods"; "How to Tag Stop Valves"; "How to Lay Out the Plumbing and Heating Shop"; samples of Plumbers Bin Labels; metal card holders; celluloid protectors.

HADDON BIN LABEL CO.,
HADDON HEIGHTS, N. J.

Use this page to get what you want

If you are looking for competent employes; or if you contemplate a change in position, have a patent for sale; wish to purchase or sell a plumbing and heating business; second-hand machinery or tools; form a co-partnership, etc., your advertisement on this page will put you in touch with the people you desire to reach.

Index to Advertisers

February, 1934

Acheson Mfg. Co.....153
American Brass Co..... 19
American Cooler Co.....141
American Oil Burner Association 100
American Seat & Tank Co.112
American Society of Heating and Ventilating Engineers 56
American Tap Bush Co...136
Ames Pump Co.....90
Anderson Mfg. Co.....101
Armstrong Bros. Tool Co..152
Ayling & Reichert Co.....151

Badger & Sons Co., E. B... 7
Bailoffet Diamond Wire Dies Co., Inc..... 97
Barber Gas Burner Co., The 99
Barnes & Jones, Inc.....104
Bastian-Blessing Co., The.150
Bead Chain Mfg. Co.....124
Bell & Gossett Co.....104
Benson Co., Inc., Alex. R..151
Bryant Heater Co., The... 57
Burnham Boiler Corp..... 48

Century Electric Co..... 86
Chase Brass & Copper Co., Inc. .....14 and 52
Chicago Faucet Co..... 13
Cleveland Brass Mfg. Co..153
Commodore Heaters Corp.104
Crane Co. 6
Curtin Valve Co., A. F....119
Curtis Pneumatic Machinery Co. 146

Dahlquist Mfg. Co.....127
Dart Mfg. Co., E. M.....152
Dayton Air Compressor Co., The 148
Decatur Pump Co.....130
Delco Appliance Corp..... 53
Deming Co.....
.....Inside Front Cover
Devlin Mfg. Co., Thos....130
Dole Valve Co.....79 and 80
Duriron Co., Inc., The.....127

Eagle-Picher Lead Co....132
Erskine Radiator Division, Chase Brass & Copper Co. 52
Excelso Products Corp... 99

Fairbanks Engineering Co.148
Fairbanks, Morse & Co...158
Fairfield Oil Burner, The..104
Fitzgibbons Boiler Co., Inc. 54
Fretz-Moon Tube Co.....122

Gerstein & Cooper Co.....101
Grand Haven Brass Foundry 149

Hayes Mfg. Co.....153
Hays Mfg. Co.....105
Hindley Mfg. Co.....151
Hoffman Specialty Co..... 49
H. L. G. Co..... 88
Hotel Auditorium.....154
Hotel Lexington 102
Hotel Lord Baltimore.....154
Hotel Melbourne.....134
Hotel Wm. Penn.....152
Hotstream Heater Co.....103

Illinois Brass Mfg. Co....148
Imperial Brass Mfg. Co...114
International Nickel Co....
.....Inside Back Cover

Janette Mfg. Co..... 98
Jarecki Mfg. Co.....111
Jones & Laughlin Steel Corp. .....Back Cover

Kainer & Co..... 46
Kennedy Valve Mfg. Co...109
Kitson Co.....103
Kohler Co. 17
Koven & Bro., Inc., L. O..116

Lavelle Rubber Co.....153
Leonard-Rooke Co.....134
Liquid Meter & Register Co. 143
Lonergan Mfg. Co..... 87
Lynn Products Co..... 94

Malleable Iron Fittings Co. 93
McDonald Mfg. Co., A. Y..152
McDonnell & Miller.....106
Milwaukee Valve Co..... 91
Minneapolis Honeywell Regulator Co..... 51

Morency-Van Buren Division, Scovill Mfg. Co.... 83
Myers & Bro. Co., F. E...
.....42 and 43
Mueller Brass Co..... 11

National Regulator Co... 98
Northern Indiana Brass Co. 10
Nye Tool & Machine Works.120

Ohio Brass Co., The..... 88

Penberthy Injector Co.... 41
Penna. Range Boiler Co...132

Radiator Specialty Co.....115
Red Jacket Mfg. Co..... 8
Reichert Float & Mfg. Co.128
Republic Steel Corp..... 12
Ridge Tool Co., The.....128
Riverside Boiler Works, Inc. 120
Rundle-Spence Co.....143

Scovill Mfg. Co.....5 and 83
Servel Sales, Inc..... 59
Smooth-On Mfg. Co.....131
Speakman Co..... 9
Standard Sanitary Mfg. Co. 15
Streamline Pipe & Fittings Co., Division Mueller Brass Co..... 11

Toledo Pipe Threading Machine Co..... 20
Thrush & Co., H. A..... 60

Universal Sanitary Mfg. Co. 110

Vogel Co., Jos. A..... 3

Warnock Mfg. Co.....151
Water Appliance Co.....148
Watts Regulator Co..... 47
Wayne Oil Burner Corp... 58
Williams Oil-O-Matic Heating Corp. 55
Wise, Inc., J. B.....157
Worcester Brush & Scraper Co. 131

York Oil Burner Co..... 97
Youngstown Sheet & Tube Co. 50

COMBINATION LAVATORY SUPPLY~ AND WASTE FIXTURES

Made from High Grade Red Pressure Metal
High Removable Seats : Swivel Discs
CHINA or ALL METAL TRIM
POLISHED NICKEL or CHROMIUM FINISH

Embodies the most popular and practical features of the finest fixtures and are furnished at most attractive prices.

Your Jobber Can Supply You

THE STANDARD OF QUALITY
SINCE 1877

J. B. WISE, INC.
WATERTOWN :: NEW YORK
NEW YORK ATLANTA CHICAGO
TOLEDO LOS ANGELES
SAN FRANCISCO SEATTLE
DETROIT FORT WORTH

Startling Price Reduction

announced on Regular Standard "CHALLENGER" FAIRBANKS-MORSE HOME WATER SYSTEM

The lowered list price for the "Challenger" to the unheard-of low figure of $48.50 offers the greatest value to prospects that has ever been built into a home water system. And to the men who hold the F-M Dealer Franchise, it offers an opportunity that has never been equalled.

For here, for the first time, is a home water system of 200 gallons capacity, now within the reach of almost every farm home. Formerly sold at a much higher price, it is truly up to the high Fairbanks-Morse standards.

With farm incomes rapidly increasing, and money available for needed improvements, this fully automatic system with motor, pump and tank is ready for installation at the lowest price on record. What an opportunity for sales and profits!

Backing it is the famous complete line of Fairbanks-Morse water systems and light plants for every need and at every price. A complete service from a single manufacturer . . . and with products and prices that will keep your business from being lured away from you because you can offer *more* for the money.

The Fairbanks-Morse Dealer Proposition is growing in value every day. Sign up with a company that protects your business from every angle. Use the coupon.

THE "CHALLENGER"

NOW

$48.50 list, f.o.b. factory

A 200-gallon outfit, complete ready to install including relay for motor protection.

with 110-volt 60 cycle Repulsion Induction Motor.

FAIRBANKS, MORSE & CO.

MANUFACTURERS

CHICAGO, ILLINOIS, U. S. A.

Branches and Service Stations Covering Every State in the Union

-----SEND FOR FREE CATALOG-----

FAIRBANKS, MORSE & CO., Dept. I 2
900 S. Wabash Ave., Chicago, Ill.
I am interested in your dealer proposition. Send me complete information and FREE Catalog and Handbook on Water Systems.

Name.....

Address.....